WPS5480

Policy Research Working Paper 5480

Diamonds Are Not Forever

Botswana Medium-term Fiscal Sustainability

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The World Bank
Poverty Reduction and Economic Management Network
Economic Policy and Debt Department
November 2010

Policy Research Working Paper 5480

Abstract

This paper analyzes Botswana's medium-term fiscal sustainability in view of the expected depletion of diamonds in the future. The analysis shows that in the absence of policy adjustments, Botswana's current fiscal policy strategy is unsustainable over the longer term, which could endanger macroeconomic stability and Botswana's reputation as Africa's success story. Ensuring medium-term sustainability of Botswana's public finances requires stronger revenue collection, through improved revenue administration, greater tax enforcement, and the rationalization of tax exemptions in order to realize the full revenue potential. Opportunities also exist to generate more revenue from the non-mining sector through changes in the tax regime. At the same time, the government needs to maximize the effectiveness of public expenditure and bring down public spending to levels that are more in line with long-term revenue prospects. A greater control over the public sector wage bill is critically important. In-house capacity for macroeconomic monitoring and fiscal analysis also needs to be enhanced further. Looking ahead, growth of a dynamic non-mining sector is crucial for Botswana not only from the fiscal sustainability point of view, but from the point of view of achieving balanced development that will create jobs and deliver durable reduction in poverty and inequality. Fiscal policy will have to play a central role in this process.

This paper—a product of the Economic Policy and Debt Department, Poverty Reduction and Economic Management Network—is part of a larger effort in the department to advance research on growth-oriented fiscal policy. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at nkojo@worldbank.org.

The World Bank Group

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Naoko C. Kojo
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October 2010

Botswana: Diamonds and Medium-term Fiscal Sustainability

Naoko C. Kojo[1]

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[1] This paper was originally prepared as a background paper for the Botswana Public Expenditure Review. I am grateful for the useful comments received from Willem Buiter, Keith Jefferis, Eduardo Ley, Alvaro Manoel, Zeinab Partow, Jay Salkin, Peter Siegenthaler, Michael Stevens, IMF Botswana team, as well as the participants of the seminar held on November 17, 2009 in Gaborone. All remaining errors are mine.

1. Introduction

Since its independence from Britain in 1966, Botswana has achieved impressive economic growth. Over the past four decades, Botswana's real growth rate averaged at 9 percent a year, while per capita GDP rose from US$250 in 1960 to US$4,800 in 2008 (in constant 2000 US dollars). Botswana has transformed itself from one of the poorest countries in the world to an upper middle income country. However, progress in human development outcomes has lagged. Botswana ranks as the fifth most unequal country in the world, and suffers from the second highest HIV/AIDS adult prevalence rate in the world. Education and health outcomes are below those of countries in the same income group.

The major driver of Botswana's remarkable GDP growth has been the abundant mineral resources, in particular, diamonds. Since the late-1970s, Botswana's economy has been heavily dependent on diamonds. Prior to the global crisis, diamond exports accounted for 70 percent of total merchandise exports, while nearly half of fiscal revenue came from the diamond sector, allowing large external and fiscal surpluses. As of end-2008, Botswana's international reserves stood at over US$9 billion (or 20 months of imports). About 40 percent of this amount represented accumulated past fiscal surpluses.

Although diamond production in Botswana is expected to continue at high levels for another decade or so, the prospects of mineral revenue accruing to the government are very uncertain, as mining moves to costly underground excavation, raising the extraction costs and squeezing the profits. In the absence of new diamond discovery or alternative source of revenue that fully offsets the falling mining revenue, the overall government revenue is set to shrink sharply once the existing diamond reserve begins to be exhausted sometime in the 2020s. The revenue outlook is further dimmed by the likely decline in customs revenue, as SACU revenue falls in line with the expected further trade liberalization.

Against this backdrop, fiscal policy has become a central policy issue in Botswana. Policy discussions have intensified particularly at the onset of the global crisis in late 2008, when global demand for diamonds plummeted, triggering a sharp fall in their exports, an output contraction, and a large revenue loss from diamonds.

This paper analyzes Botswana's medium-term fiscal sustainability in view of the expected depletion of diamond reserves in the next two decades. Four key sets of questions are addressed in this paper: (i) Is Botswana's current fiscal strategy sustainable in the longer term? (ii) If not, what could be an alternative fiscal strategy for Botswana? (iii) Are the existing fiscal rules and fiscal monitoring arragements appropriate to ensure fiscal sustainability? (iv) If not, what alternative fiscal rules should Botswana adopt?

The structure of the paper is as follows. As a background, Section 2 reviews the main features of Botswana's diamond mining and discusses the impacts on the fiscal operation to date. Section 3 then empirically examines fiscal sustainability in Botswana through medium-term projections based on the financial programming framework used by the IMF; sensitivity analysis is carried out to examine the robustness of the fiscal paths by varying key assumptions. Section 4 considers alternative fiscal strategies for Botswana with a view to identifying appropriate policy measures that would bring Botswana's fiscal stance to a sustainable path. Section 5 discusses policy options available for the government. Finally, Section 6 concludes the paper.

2. Botswana and Diamonds

Since diamonds were first discovered in Botswana in 1967, a year after its independence from Britain, the mining sector has been the backbone of Botswana's economy, with diamonds being the main contributor

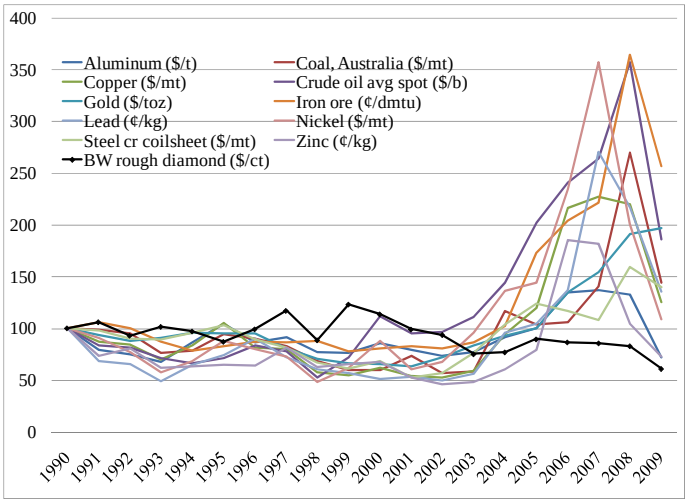
to exports, GDP and government revenue. This section provides some background on the role of diamond mining in the Botswana economy.

2.1 Diamonds and Botswana's Economy

Botswana is the world's leading diamond producer in terms of output value. In recent years, Botswana has constantly exported over 30 million carats of rough diamonds per year, generating export proceeds of about US$3 billion. Diamond mining in Botswana takes place through Debswana Diamond Company, a 50-50 joint partnership of De Beers and the Government of Botswana. All the rough diamonds produced in Botswana are exported to the Diamond Trading Company (DTC)—the sales and distribution arm of the De Beers Group—which sorts, values and sells approximately 40 percent of the world's rough diamonds by value.[2]

Diamonds are characteristically different from other commodities. The most distinctive feature of diamonds is the relative price stability (Figure 1).[3] Much of this price stability rests on the fact that a single company, De Beers, which controls a significant proportion of the world's rough diamond mines and distribution channels for gem-quality diamonds (Keretschmer, 1998), has used its dominant position to control the international diamond market. Nevrtheless, with the emergence of new diamond producers such as Russia, Canada and Australia, which chose to distribute diamonds outside De Beers' channel, the company's dominant market position has weakened considerably in recent years (Nocera, 2008). Since the turn of the century, the diamond industry is said to have gone through a major transformation from a supply-controlled industry to that which is driven by demand.

Figure 1. Commodity Price Indices (1990 = 100) /1



Sources: World Bank GEP database and Botswana Department of Mines Annual Reports (various issues).
1/ The price of rough diamonds is derived from the value of Botswana's diamond exports and volume of production (carats recovered).

The relative absence of the extreme boom and bust cycles in diamond mining has helped Botswana achieve rapid economic growth. Although Botswana has experienced some output fluctuations over time (1981/82 and early 1990s), the magnitudes of these fluctuations were far smaller compared with those experienced by other resource-dependent countries. Since production in Jwaneng mine reached its full capacity in 1985, Botswana's real output has more than tripled, with per capita income growing more than five times in Pula terms.[4] The mining sector—where the bulk of value added is generated by diamonds—has been the largest contributor to the country's GDP, although recently its share has fallen to about 35-40

[2] Since 2009 a small proportion of diamonds produced in Botswana is supplied domestically to facilitate the growth of local diamond cutting and polishing industries.
[3] Other differences include the absence of universal world price per carat/gram of diamonds since prices vary widely depending on the stone's carat, color, clarity and cut; and the low liquidity of diamonds as an investment vehicle due to the lack of liquidity and homogeneity as well as difficulties in grading and hence in pricing the stones.
[4] It was not only diamond mining but the sense of corporate social responsibility that De Beers brought to Botswana. It has built roads, hospitals and schools in Botswana, worked to help the country deal with HIV/AIDS and been involved in and paid for many other things that have helped make Botswana an African success story (Nocera, 2008).

percent as the economy has diversified somewhat. Although from a very low base, output of other minerals, such as copper/nickel, soda ash and gold, has grown considerably over the past 5 years, but their contribution to total exports vary significantly year by year (10-20 percent), owning to the swings in international commodity prices.

Despite the government's efforts to diversify the economy away from diamonds, development of non-mining sectors, in particular, agriculture, construction and manufacturing, has not been very encouraging, constrained by, among other factors, high labor costs, a shortage of skills and the small domestic market. However, the service sector, especially banking and insurance, has shown relatively robust growth for some time.[5] Unemployment remains persistently high.

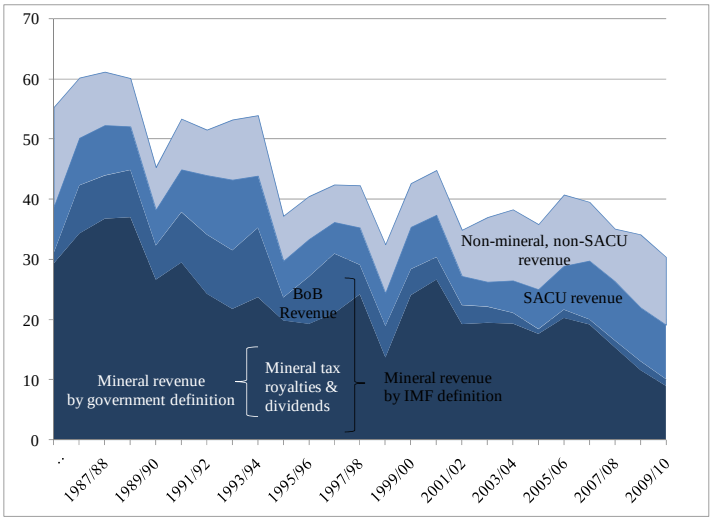
While diamond mining has immensely contributed to Botswana's economic growth, the large revenue stream from the mining sector has also allowed a rapid expansion of the government. Today the government sector accounts for 15 percent of GDP (over 25 percent of non-mining GDP) and hires 40 percent of the formally employed labor force in Botswana. The economy is directly and indirectly dependent on government spending; fiscal operation has a significant bearing on Botswana's domestic demand.[6]

2.2 Diamonds and Botswana's Fiscal Policy

2.2.1 Revenue

Revenue from the mining sector makes up about 45-50 percent of total government revenue (Figure 2). The agreement governing the revenue sharing between Debswana and the government is confidential. Using diamond exports data as a rough approximation of Debswana's profit, one can find that diamond revenue accruing to the government's coffer has been about 60-65 percent of diamond exports since 2000. Revenue collection from other minerals is negligible, with nearly 99 percent of mineral revenue coming from the diamond sector. As such, throughout the paper mineral revenue refers to the government's share of diamond profits.

Figure 2. Government Revenue Excluding Grants
(in percent of GDP)



Source: Ministry of Finance and Development Planning.

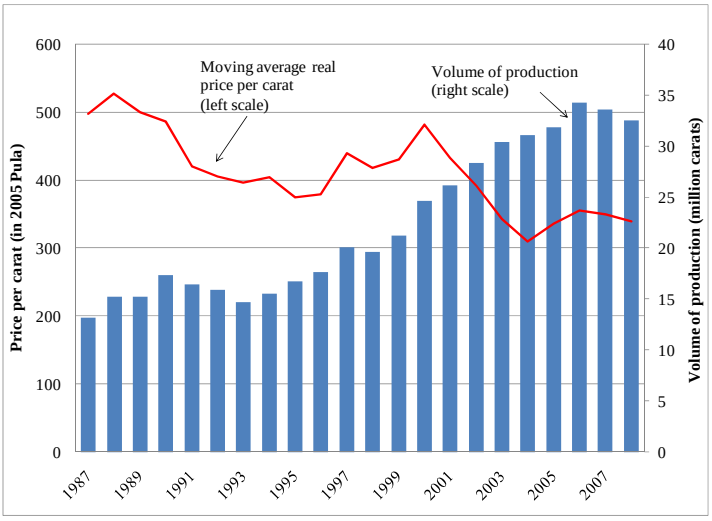
In addition, the government receives transfers from the Bank of Botswana (BoB, the central bank), which derive from the investment return on the government's savings (past fiscal surpluses) that are held in the BoB and invested in long-term assets, as well as dividends from the BoB.[7]

[5] Agriculture, construction and manufacturing have declined even in percent of non-mining GDP.
[6] Note, however, the government sector's contribution to national income needs to be interpreted carefully. As directed by the UN System of National Accounts (SNA), a government's output is valued at cost. Therefore, expanding the cost of government activities, and in particular, the cost of its employment will show up uncritically as increased output in the national accounts, regardless of whether this output is of any real value.
[7] According to the Bank of Botswana Annual Report (1996), the BoB transfer to the government is calculated on the basis of the expected returns from the government's portion of the Pula Fund (i.e., Government Investment Account, see Box 1), estimated in SDR terms over a five- to seven-year period. The actual payment to the government is made on every quarter during the fiscal

Since the bulk of the BoB transfers accounts for the investment return on the fiscal reserves, made possible by large mineral revenue, the IMF defines the BoB transfer as part of the government's total mineral revenue. To avoid confusion, this paper follows the government's definition of mineral revenue, which comprises mineral tax, royalties and dividends.

Despite the increase in production volume, mineral revenue accruing to the government, as a percentage of GDP, has been declining since the late 1980s. A number of possibilities may explain this phenomenon, including higher production costs (e.g., fuel prices and labor cost) and thus lower profit, a declining share of diamonds of gem quality in total production, and/or falling diamond prices. On the latter two, estimates of the average price of rough diamonds produced in Botswana—derived from the value of diamond exports and volume produced—show a declining path, particularly since the turn of the century (Figure 3). The temporary rise in the estimated price during 1999/00 and 2000/01 is likely to be explained by the difference between the volumes of diamond exported and produced.[8]

Figure 3. Botswana Diamonds: Production Volume & Average Price



Sources: Department of Mines Annual Reports (various issues) and author's calculations.
1/ 2-year moving averages of the price of rough diamonds, estimated from the volume of production and value of diamond exports.

In line with the decline in mineral revenue, total government revenue has fallen over time. Non-mineral, non-SACU revenue (excluding foreign grants) has grown recently following the introduction of VAT (2002) and improvements in tax compliance and collection (2003/04). However, its contribution to overall revenue is still low, accounting for only about 30 percent (10 percent of GDP). With 70 percent of revenue outside the control of the government, Botswana's revenue structure is vulnerable to external conditions. For example, in 1994/95 government revenue fell due to sluggish diamond sales and low BoB transfers associated with adverse conditions in the international capital markets. In 1998/99 when the Asian crisis led to a drop in diamond exports, government revenue plunged even more sharply by 10 percent of GDP, turning Botswana's fiscal position into a deficit for the first time since 1982/83.

year, and recorded as government revenue. In addition, the BoB's net income for its financial year, after accounting for administrative and interest expenses, as well as any appropriation to the BoB's General Reserve, are paid annually to the government at the end of the fiscal year (March 31).

[8] Time series data on the volume of diamond exports are not available. It is said that during the Asian crisis, when demand for diamonds slumped, Debswana limited the supply of diamonds by stockpiling them to keep the price up. Once the crisis was over and global demand recovered, it released the stock to the market. If this was indeed the case, the volume of diamonds exported around 1999-2001 should have exceeded the volume produced in a given year. This could artificially raise the estimated average diamond prices during the period concerned.

Table 1. Central Government Operations (in percent of GDP, unless otherwise indicated)

	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10 /1
Revenue and Grants	**36.5**	**40.9**	**40.2**	**35.8**	**34.8**	**31.4**
Revenue	35.8	40.7	39.5	35.1	34.1	30.4
Tax Revenue	**20.5**	**22.0**	**23.3**	**21.6**	**23.4**	**20.3**
Mineral Income Tax	5.1	5.3	5.6	4.7	3.9	1.4
Non-Mineral Income Tax	4.2	5.5	4.5	3.2	5.3	5.1
Customs Pool (SACU)	6.6	7.2	9.7	9.8	8.9	9.0
Sales Tax/VAT	4.3	3.6	3.3	3.6	5.0	4.5
Other taxes, incl. export duties	0.3	0.3	0.3	0.3	0.3	0.3
Non Tax Revenue	**15.3**	**18.7**	**16.2**	**13.5**	**10.7**	**10.1**
Mineral Royalties and Dividends	12.6	15.0	13.6	10.7	7.7	7.6
Interest receipts	-0.2	0.2	0.1	0.1	0.1	0.0
Other Property Income, of which	0.9	1.7	0.9	1.3	1.6	1.3
o/w BOB revenue	0.8	1.4	0.8	1.1	1.5	1.1
Fees and charges	2.1	1.9	1.5	1.4	1.3	1.2
Grants	**0.7**	**0.2**	**0.7**	**0.7**	**0.7**	**1.0**
Expenditures and Net Lending	**35.3**	**32.4**	**28.9**	**31.0**	**40.2**	**44.6**
Recurrent	**28.0**	**26.0**	**23.4**	**23.2**	**27.3**	**29.1**
Wages and Salaries	10.4	9.6	8.5	8.6	10.0	10.5
Interest	0.6	0.6	0.3	0.3	0.3	0.4
Domestic Interest	0.6	0.3	0.3	0.2	0.2	0.0
External Interest	0.0	0.3	0.1	0.1	0.1	0.0
Other	16.9	15.8	14.5	14.3	17.0	18.2
Development Expenditure	**8.0**	**7.0**	**5.9**	**8.2**	**13.1**	**14.7**
Net lending	**-0.6**	**-0.6**	**-0.4**	**-0.4**	**-0.2**	**0.8**
Overall Surplus/Deficit	**1.2**	**8.5**	**11.2**	**4.8**	**-5.4**	**-13.3**
Primary surplus/deficit	1.8	9.1	11.6	5.1	-5.0	-12.8
Financing	**-1.2**	**-8.5**	**-11.2**	**-4.8**	**5.4**	**13.3**
External borrowing, net	-0.3	-0.3	-0.3	0.0	-0.1	7.2
New borrowing	0.0	0.0	0.0	0.2	0.2	7.6
Amortisation (- entry)	-0.3	-0.3	-0.3	-0.3	-0.3	-0.4
Domestic borrowing, net	0.0	-1.4	0.0	0.6	1.5	0.7
New borrowing	0.0	-1.4	0.0	1.6	2.2	3.0
Amortisation (- entry)	0.0	0.0	0.0	-1.1	-0.7	-2.3
IMF Transactions	0.0	0.0	-0.1	-0.1	-0.1	-0.1
Pension Liability Service Fund	-3.2	-2.1	0.0	0.0	0.0	0.0
Other Financing	-1.0	1.4	-0.5	-0.2	-1.2	0.0
Change in Cash Balances	3.4	-6.2	-10.4	-5.0	5.3	5.0
Memorandum items						
Mineral revenue (% of GDP)	17.7	20.3	19.2	15.4	11.6	9.0
Mineral corporate tax	5.1	5.3	5.6	4.7	3.9	1.4
Royalties, dividends	12.6	15.0	13.6	10.7	7.7	7.6
SACU revenue	6.6	7.2	9.7	9.8	8.9	9.0
Non-mineral, non-SACU revenue (% of GDP)	10.8	11.8	9.8	8.7	12.1	11.3
Non-mineral fiscal balance (% of non-mining GDP)	-28.0	-21.3	-15.4	-19.9	-28.7	-35.5

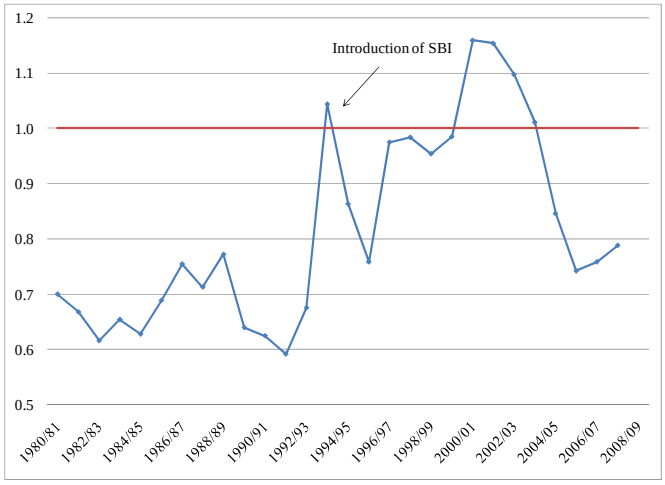
Sources: Botswana authorities and author's calculation.
1/ Estimates.

2.2.2 Fiscal Rules

To prevent excessive spending and ensure fiscal sustainability in anticipation of the future diamond depletion, the government has, over time, set various fiscal rules, both formal and informal. First, the "Principle of Sustainable Budgeting" was introduced in 1994 with the intention of ensuring all mineral revenue to be invested productively or saved, and not used for consumption. This led to the construction of the Sustainable Budget Index (SBI), defined as the ratio of non-education, non-health recurrent expenditure to non-mining revenue. Although it is not a legal requirement, an SBI of no greater than unity is targeted in order to ensure non-investment expenditure to be financed by non-mineral revenue and conserve the country's wealth.

Another fiscal "rule", introduced in 2006 as part of the Mid-term Review of National Development Plan 9 (MTR NDP9), sets the maximum government expenditure at 40 percent of GDP, to be consistent with the projected medium-term government revenue. The MTR NDP9 (para. 68) also targeted increasing the share of development spending in the budget to 30 percent by 2008/09. Furthermore, under Section 20 of the Stock, Bonds and Treasury Bills Act (Chapter 56:07, 2005), the government's total domestic debt and guarantees cannot exceed 20 percent of GDP. Similarly, the stock of government foreign debt and guarantees is limited to 20 percent of GDP.

Figure 4. Botswana: Sustainable Budget Index (SBI)



Source: Author's calculation based on data provided by the authorities.

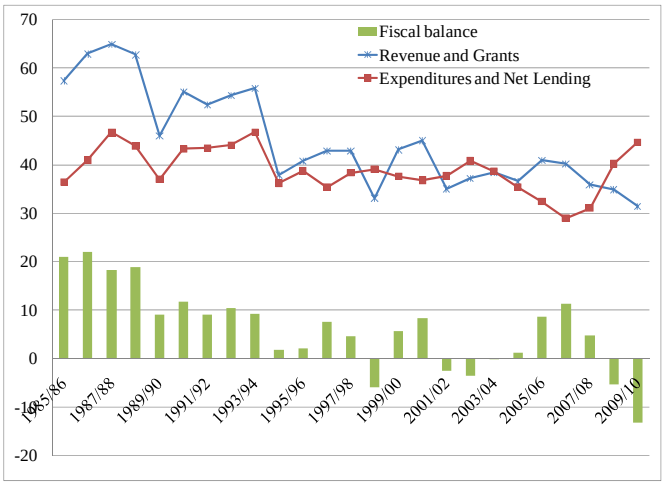
Adherence to the fiscal rules has enjoyed mixed success. Although the SBI fell below unity immediately after its introduction in 1994/95, the effect has not been long-lasting (Figure 4); the SBI exceeded unity in 2001/02, when exceptionally high SACU revenue during 1999/00-2000/01 came to an end.[9] In 2003/04, however, the measures to raise domestic revenue, coupled with across the board cuts in all expenditures, resulted in a dramatic fall in the SBI. Nonetheless, some views that it was the changes in the accounting practices that contributed to the SBI's dramatic improvement. For example, since the 2007/08 Budget, operation and maintenance (O&M) spending is explicitly included in development expenditure (Bank of Botswana, 2006). Over time Botswana's development expenditure has become much less of capital expenditure, comprising a mix of capital and current spending, some with no discernable end in sight.[10]

The more recent 40 percent expenditure rule has also helped discipline overall expenditure somewhat. Yet again, in 2008/09, barely three years after the introduction, total government expenditure exceeded 40 percent of GDP albeit marginally, caused by the sharp rise in development expenditure and the negative GDP growth affected by the slump in diamond sales (see below).

[9] SACU revenue was exceptionally high during 1999/00-2000/01 because of the rapid depreciation of the South African Rand.
[10] Consulting fees and HIV/AIDS treatment program are accounted as development expenditure, not as recurrent spending. However, such spending is not additional investment, and categorizing it as such can distort the objective of rebalancing the budget in favor of investment spending. Also, see MTR NDP9 (p. 8, para. 28), which says, "there is no precise correspondence between development expenditure and investment by government."

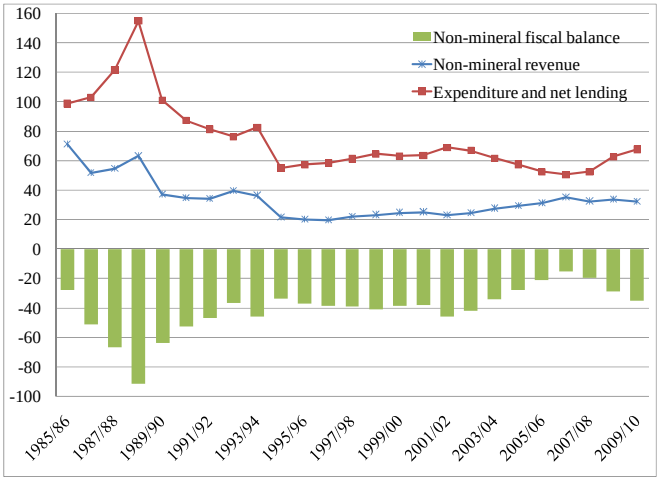
On balance, however, Botswana has run a fairly prudent fiscal policy, avoiding many pitfalls experienced by other natural resource-rich countries. It has avoided an excessive accumulation of external debt. Rent-seeking behavior has been kept to a minimum, as reflected in Botswana's excellent governance indicators. Apart from the authorities' cautious approach, the relative stability of diamond prices has played a role in the maintenance of a stable fiscal policy. In addition, the government's capacity constraints affecting full implementation of the development budget may have worked to prevent rapid increases in expenditure. In Botswana, actual development spending has been consistently below the budgeted development budget due to capacity constraints to implement projects, despite its preference for ambitious developmental programs. Botswana maintained a large fiscal surplus most of the time in the 1980s and 1990s (Figure 5). These surpluses have been saved in the Government Investment Account (GIA) with the BoB as the government's portion of the Pula Fund (Box 1), and invested in long-term assets mostly abroad.

Figure 5. Botswana: Fiscal Operation (in percent of GDP) /1



Source: Ministry of Finance and Development Planning
1/ 2009/10 figures are estimates.

Figure 6. Botswana: Non-mining Fiscal Operation
(in percent of non-mining GDP) /1



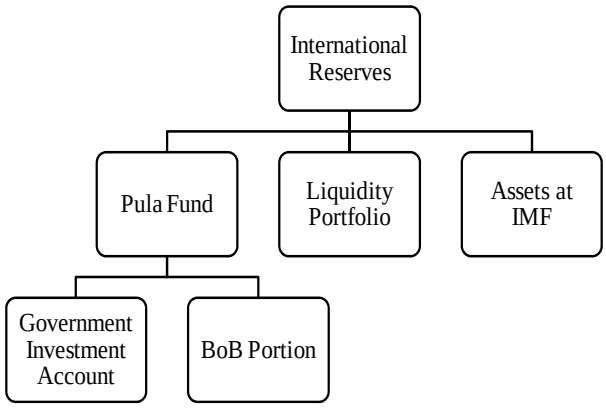
Source: Botswana authorities.
1/ 2009/10 figures are estimates.

Nonetheless, with the declining mineral revenue, the occurrence of fiscal deficits has become more frequent in the last decade. The government has financed the deficits primarily by drawing down on the GIA. Foreign and domestic borrowing has played a very limited role to close the fiscal gap. Issuance of government securities that began in 2002/03 was only intended for the development of local capital markets. At end-2007/08, external debt amounted to a mere 2.9 percent of GDP, whereas domestic debt was 2.8 percent. Both of them were well below the statutory limits. Figure 6 shows Botswana's fiscal operation measured by non-mining GDP, a conventional measure for resource dependent countries. A combination of overall fiscal surpluses, non-resource deficits and a large government characterizes the budgets of major resource-dependent countries.[11]

[11] Also, resource abundance is often associated with poor development of human capital, as a low degree of economic diversification provides few opportunities for learning and doing (Söderling, 2005).

Box 1. The Pula Fund

The Pula Fund was established in November 1993, and was subsequently re-established in the current form under the new Bank of Botswana Act (1996) with the objective of providing greater flexibility in the management of international reserves, and greater certainty in the forecasting of annual "dividend" payments to the government from the BoB. The Act came into operation on January 1, 1997.



Under the Act, Botswana's international reserves were split into two portfolios: (i) the Liquidity Portfolio, to provide the foreign exchange needed for normal day to day international transactions; and (ii) the Pula Fund (officially referred to as "long term investment funds" in the Act) to be invested in long-term assets to achieve higher returns. The Pula Fund, managed by the BoB, is composed of the Government Investment Account (GIA), which reflects savings from accumulated fiscal surpluses, and the BoB's reserve accumulation above the target for liquid reserves (see the diagram right). Pula Fund assets are invested in long-term instruments overseas. The Act charges the BoB to manage and determine investment policy of, and the payment of dividends accruing from, the Pula Fund, in consultation with the Minister of Finance and Development Planning (MFDP). Together with the Liquidity Portfolio, since 1993 the Pula Fund has been held with a global custodian.

While the Act provides a legal framework for the establishment, management, and auditing of the Fund, it does not specify the objective of the Fund in the context of overall fiscal policy and rules on the operation of the Pula Fund, particularly concerning payments into, withdrawals from and their uses. Although the original idea behind the establishment of the Pula Fund was to invest in long-term offshore assets the financial resources that cannot be absorbed domestically for productive purposes (Mohohlo, 1997), there are no other laws, constitutions, regulations nor guidelines that explicitly specify the link between the Pula Fund and fiscal policy. Since its establishment, the Pula Fund has, by and large, served as a revenue stabilization fund, rather than an investment fund, but also has been regarded by many as a future generation fund, despite the absence of clearly defined objectives as such. For example, "2009 Budget Review" by Econsult views the accumulated fiscal surpluses as part of the inheritance of future generations (Econsult, 2009).

2.3 Diamonds and Future Challenges

The recent global economic crisis painfully exposed Botswana's vulnerability of heavy dependence on diamonds as a source of growth, exports and fiscal revenue. With the advent of the crisis in September 2008, global demand for commodities collapsed almost immediately, prompting a sharp fall in their trading. Global demand for luxury goods such as diamonds was hit even harder. In November 2008 Botswana's diamond exports came to an abrupt halt. Diamond exports fell to virtually zero in the last quarter of 2008, forcing Debswana to temporarily close all of its four diamond mines. Botswana's mining GDP plunged by 68 percent in the first quarter of 2009 year on year.

Government revenue suffered as a result. In 2008/09, mineral revenue declined by 27 percent in real terms from the previous year. In contrast, public expenditure recorded a sharp increase in the run up to the elections. Current expenditure rose by 13.5 percent from the previous fiscal year, reflecting a further increase in the public sector wage, attributed mainly to the introduction of retention allowances for civil servants with scarce skills. Development expenditure grew by more than 50 percent as the government accelerated the construction of airports, roads, dams, and schools, and embarked on the Morupule B power project. The fiscal outcome of 2008/09 was a deficit of 5.4 percent of GDP, the bulk of which was financed by drawing on the fiscal reserves. In early 2009, Botswana secured a budget support in the amount of US$1.5 billion from the African Development Bank (AfDB). In light of greater uncertainties, launching of the National Development Plan 10, or NDP10, was delayed by one year. In some way, the global crisis served as a reminder of some future reality when Botswana runs out of diamonds.

A sign of market recovery started to emerge in the second quarter of 2009. Debswana resumed operation in two of the four mines in April 2009 and another was reopened later in the year. Subsequently, prices for rough diamonds began to strengthen, allowing production to build up more rapidly than had initially been expected. Nonetheless, diamond production during 2009/10 remained around half of the normal production. Preliminary estimates suggest that government's mineral revenue dropped further by 26.5 percent in real terms from 2008/09, whereas expenditure continued to rise on account of increasing spending commitments through two supplementary budgets. Despite a civil-service salary freeze, the hiring of some 1,600 teachers and medical personnel pushed up the government's wage bill even further. The resulting budget deficit in 2009/10 is estimated to be around 13 percent of GDP, an unprecedentedly high level for Botswana.[12] The bulk of the financing gap was closed by borrowing from the AfDB (of which only US$1 billion was drawn) and the draw-down on the GIA. Domestic borrowing played a limited role. The government estimates the end-2009/10 stock of public external debt and guarantee at 13 percent of GDP, public domestic debt and guarantee at 5.8 percent, and the GIA balance at 23 percent.

In a bid to restore fiscal discipline, the 2010/11 Budget envisaged expenditure cuts and highlighted a range of efficiency savings and revenue generation efforts. These include prioritization of project spending, tightening of budget management and implementation of measures to raise revenue, such as the increase in the VAT rate from 10 percent to 12 percent (effective from April 2010), the replacement of the two-tiered corporate tax system with a single company tax at 25 percent, and a hike in government fees and charges, as well as drawing dividends from parastatals.[13]

Despite the rapid bounce back in diamond markets, however, the outlook for diamond exports remains highly uncertain. While the global economy is pulling out of a recession due mostly to robust growth in Asia, fears are intensifying that the recovery of advanced economies, where the bulk of demand for diamonds comes from, is weakening. Unemployment remains persistently high. In addition, it is viewed

[12] At the time of finalizing this report, the fiscal outcome for 2009/10 was not yet available.
[13] Subsequently, the government postponed the implementation of planned changes to (corporate) income tax legislation until July 2011.

that demand for rough diamonds may currently be unsustainably high, driven by restocking needs, and that once inventory is built, demand, and hence prices, may moderate.

Although diamond production in Botswana is expected to continue at high levels for a while, revenues accruing to the government are projected to stop growing sometime in the 2020s, as a rapid depletion of ore from Jwaneng Cut 8 starts and mining moves from low-cost surface mining to underground, increasing extraction costs and reducing profits. Production may continue until the anticipated depletion of reserves around 2030, but profitability and economic feasibility of underground mining are uncertain. The revenue outlook is further shadowed by the likely, permanent decline in SACU revenue, the second largest revenue source for Botswana.

3. Fiscal Sustainability Analysis

This section carries out medium-term fiscal sustainability analysis for Botswana. In view of the declining mineral revenue as diamond reserves are depleted, it is important that Botswana adopts a forward looking approach and formulates a strategy. Determining whether the current fiscal policy is sustainable is important for policymakers because the answer may indicate the need for policy correction sooner than later.

3.1 Operational Definition of Fiscal Sustainability

Before analyzing Botswana's medium term fiscal sustainability, it would be useful to define what it means by "sustainable fiscal policy" in this paper. This paper draws on the standard intertemporal sustainability framework, but takes a very operational approach of assessing medium-term fiscal sustainability. Specifically, we define that fiscal policies are sustainable if:[14]

- A country is expected to be able to continue servicing its debt without an unrealistically large future correction to the balance of revenue and primary expenditure, and/or without resorting to debt repudiation or excessive debt monetization.[15]

- A reasonable level of external shocks is not expected to bring a country into debt distress.

3.2 Fiscal Sustainability Analysis for Botswana

Fiscal sustainability analysis for Botswana will be carried out in the following manner. First, using a forward-looking accounting framework, we construct a baseline fiscal scenario based on a set of plausible macroeconomic assumptions, assuming that the policy strategy described in the 2010/11 Budget and NDP10 is maintained.[16] The projected medium-term fiscal scenario—the paths of government revenue,

[14] Technically, a country's fiscal policy is defined as sustainable if it satisfies the solvency condition expressed as:

$$D_0 = \sum_{\tau=0}^{\infty} \frac{PB_{t+\tau}}{(1+r)^{\tau}}$$

where D denotes the stock of public debt, PB the primary balance, and r the interest rate on public debt (assumed constant), all expressed in real terms.

[15] See IMF (2002).

[16] The accounting framework employed in this paper is analogous to the "Fiscal" module, which comprises one of the five modules in the financial programming used by IMF economists. The financial programming framework is deterministic. It is not a fully-specified macroeconomic model, and thus does not directly capture the behavioral relationships (e.g., secondary responses to policies, such as the impact of fiscal policy on growth and inflation). While such behavioral relationships can be estimated by a computable general equilibrium (CGE) model, the operational application of this approach is extremely

expenditure, fiscal balance, debt-to-GDP ratio, debt service profile, etc—will then be assessed against the operational sustainability conditions described above. An increasing debt ratio is generally regarded as a cause for concern, because it is typically accompanied by a deterioration in key macroeconomic indicators (i.e., widening fiscal deficits, rising inflation, falling reserves, etc.) and will require policy adjustments sometime in the future.

Medium-term projection for Botswana poses significant challenges. First, there are considerable uncertainties about the prospects of diamonds (prices, recovery of demand, lifespan of the mine, profitability, etc.) and future of the SACU revenue sharing arrangement. There are also uncertainties regarding the non-mining private sector's response to reduced government spending. Second, detailed and reliable information is often limited with regard to the fiscal account, especially government expenditures by economic classification, debt and guarantees, all of which influence the quality of the projection.

In order to address these problems, sensitivity analysis will be performed by varying key assumptions, such as diamond sector performance, non-mining GDP growth, exchange rate and cost of borrowing, thereby assessing the robustness of the baseline results. The sensitivity analysis can also be interpreted as introducing uncertainties into the deterministic framework. Alternative scenarios that incorporate different policy strategies will be examined in the following section.

Fiscal sustainability analysis for Botswana considers only central government operations. Where information is available, contingent liabilities, such as debt that is explicitly guaranteed by the central government, are included in the analysis. In the absence of information, we do not incorporate quasi-fiscal operations other than the revenue impact of the central bank's sterilization operation. The interest expenses associated with sterilization is captured in the budget as transfers from the BoB, which derive from the investment return on the fiscal savings as well as the BoB's net income (which includes the cost of sterilization).[17]

The projection period adopted in this paper is 20 years, with 2010/11 as a starting year. While medium-term scenarios generally consider a time horizon of 5-10 years, the prospect of a significant change in Botswana's economic conditions argues for an extended projection period. This will allow policymakers to identify potential future problems and prepare an appropriate policy strategy well in advance, although projections of more distant years are less precise and subject to greater uncertainties.

3.2.1 Medium-term Fiscal Projections: Baseline Scenario

Macroeconomic Assumptions

For Botswana, the backbone of the macro-fiscal framework is the diamond sector's performance. The diamond sector is assumed to make a decent recovery in 2010/11, after a sharp contraction in 2009/10. Following NDP10, a full recovery of the sector is then assumed to take place over 2011/12—2013/14.[18] Once diamond output returns to the pre-crisis level in 2013/14, thereafter mining sector growth is assumed to plateau because of the base effect. The production profile and real profit per carat of

problematic for Botswana given the relatively limited availability of macro- and microeconomic data for the identification and estimation of parameters with reasonable precisions.

[17] The stock of Bank of Botswana Certificates (BoBCs) is not included in the projection of medium-/long-term government domestic debt, due to difficulties in projecting the magnitude of sterilization.

[18] While the assumption on the diamond sector recovery is in line with NDP10, the growth rates assumed in this paper are somewhat different, taking into account more recent developments since the finalization of the Plan. Specifically, we assume a smaller bounce-back of diamond sector growth, because the actual decline in diamond output in 2009/10 was much smaller than envisaged in NDP10.

diamonds are then calibrated to be consistent with the mining growth rates and information obtained from Debswana, taking into consideration the short- and long-term effects of the Cut 8 project. Non-mining sector growth is assumed to accelerate in the early years of the Plan, boosted by investment in the power sector (Morupule B power project). The baseline assumptions on inflation and the exchange rate are taken from the latest IMF Staff Report (2010).[19] The 7-year Plan period is then extended for 20 years till 2029/30 taking the 2015/16 assumptions, except for the growth rate of mining and non-mining sectors. The medium-term mining growth rates are calibrated assuming a certain path of diamond output and profit per carat, considering the projected increases in mining costs and production profile as described in NDP10. As regards non-mining GDP, it is assumed that annual growth rate would remain at 4 percent in the medium term, dampened by lower government spending. Table 2 provides the summary of baseline macroeconomic assumptions.

Table 2. Baseline Macroeconomic Assumptions

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Real GDP growth (annual percentage change)	6.6	5.2	6.9	5.4	3.8	2.6
Real mining GDP growth (annual percentage change)	11.0	7.0	5.5	2.9	1.4	-0.1
Real non-mining GDP growth (annual percentage change)	4.4	4.3	7.7	6.8	5.0	4.0
Inflation (period average, in percent p.a.)	7.3	6.1	5.7	5.5	5.4	5.3
Exchange rate (Pula/US$)	7.5	8.0	8.3	8.7	9.1	9.4

Sources: See text.

Fiscal Policy Strategy

The Baseline Scenario takes the policy strategy described in the 2010/11 Budget and NDP10. First, in line with the 2010/11 Budget, the Baseline Scenario assumes the retention of the public sector wage freeze in 2010/11. For the remainder of the Plan, the government is assumed to allow no further net increase in the established posts (NDP10 policy commitment), in order to limit the growth of government expenditure (NDP10, para. 6.50). For simplicity, it is assumed that existing vacancies will remain unfilled during the Plan. Other recurrent expenditures, i.e., recurrent expenditure other than the wage bill and interest payments, are assumed to grow at low rates, as indicated in NDP10 (Table 6.6, p. 81).[20] Development expenditure is front-loaded for critical investment projects, but is assumed to decline rapidly at the rate also indicated in NDP10 (Table 6.7, p. 81). This assumption suggests that both other recurrent and development expenditures will decline rapidly as a percentage of GDP.[21] See Table 3.

Table 3. NDP10 Expenditure Projections
(annual real percentage change)

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Recurrent expenditure	0.4	0.3	1.6	1.5	1.4	1.3
Development expenditure	-4.6	-4.6	-4.6	-4.6	-4.6	-4.6
GDP	6.6	5.2	6.9	5.4	3.8	2.6

Sources: NDP10, Tables 6.6 and 6.7.

[19] NDP10 does not provide the exchange rate and inflation assumptions.
[20] Note that for recurrent spending we deviate from NDP10 assumptions by projecting the wage bill, interest payments and other recurrent expenditure separately. This will allow us to examine how each variable would respond to changes in macroeconomic and policy assumptions.
[21] Note that NDP10 emphasizes that these growth rates are upper limits (para. 6.41).

On the revenue side, the Baseline Scenario assumes that the current revenue measures, including those introduced in the 2010/11 Budget, will be maintained, as NDP10 is silent about revenue policy. The statutory VAT rate is assumed to remain at 12 percent. The rationalization of non-mining corporate income tax is assumed to take effect from July 2011 as scheduled, but we assume this will have a negligible impact on revenue collection, due to the long list of exemptions.[22] Fees and charges are assumed to be adjusted in line with inflation every year.

Fiscal deficits will be financed by a combination of domestic and external borrowing as well as running down of the GIA balance (NPD10, para. 6.48). It is assumed that, until the statutory debt limit is reached, the government will prefer cheaper external borrowing. Once the external debt ceiling becomes binding, we assume that the government will prefer drawing down on fiscal savings to domestic borrowing, out of concerns that a heavy reliance on the latter could crowd out private investment. For 2010/11, the Baseline Scenario adopts the borrowing plan indicated by the MFDP and assumes that the government will source about US$250 million externally to finance the budget deficit, while issuing a guarantee, in the amount of US$825 million, for the external debt services payable by Botswana Power Corporation (BPC). This borrowing by BPC is to finance part of the Morupule B power project. As regards domestic financing, in 2010/11 the government is assumed to raise P 1.9 billion through the issuance of government bonds and Treasury bills. The remaining fiscal gap is assumed to be filled by the drawdown of accumulated fiscal savings in the GIA. See Annex 1 for further details on the assumptions and calibration.

Projection Results

The Baseline projection results are presented in Table 4. We first focus on the details of the projection results over the NDP10 period. Later, we will turn to the medium-term sustainability issues.

Revenue performance is projected to remain weak during Plan, with overall government revenue staying just below 30 percent of GDP, compared with the NDP9 average of 38 percent. In line with the diamond sector recovery, by 2012/13 mineral revenue would bounce back to 11 percent of GDP, a level slightly lower than that in 2008/09. VAT revenue would rise as a result of the rate increase in April 2010. Nonetheless, these gains would likely be offset by declines in SACU revenue, induced by the temporary factor such as the adverse impacts of the global crisis, as well as the likely permanent factors such as further trade liberalizations.[23]

Government spending would remain high in 2010/11 due largely to the front-loading of development and other current spending, but would fall rapidly as long as the government pursues the ambitious spending cuts, as indicated in NDP10. First, with the strict enforcement of the no net personnel increase policy, and provided that wage increases are limited to cost of living adjustments at the rate of inflation, the government wage bill could be compressed sharply from 10.5 percent of GDP in 2009/10 to 7.2 percent by the end of the Plan period. Although interest payments would rise as government debt increases, the growth in the interest bill would be offset by the fall in other current spending. Finally, as large infrastructure projects phase out and development spending falls sharply, total government expenditure could be reduced from above 39 percent of GDP in 2010/11 to 29 percent in 2015/16. An expenditure compression of this magnitude is very ambitious, especially within a matter of 5 years, and the government's ability to contain spending will be seriously tested.

[22] Companies designated as manufacturing or registered by the International Financial Service Center are taxed at 15 percent. Reportedly many other companies are lobbying for a similar exemption.

[23] For example, the South African authorities have revised the SACU revenue pool forecast downwards by 20 percent for 2010/11 in the Medium-term Budget Policy Statement (October 2009), taking into account the negative impacts on South Africa's imports, especially automobiles, which account for about a third of total SACU revenue. The impact of the crisis would be compounded by the need to return past over payments to the common revenue pool.

Table 4. Medium-term Fiscal Projection: Baseline Scenario
(in percent of GDP unless otherwise indicated)

	Act.	Est./1	Proj.	Proj.	Proj.	Proj.	Proj.	Proj.
	2008/09	**2009/10**	**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**
Revenue and Grants	**34.8**	**31.4**	**29.2**	**29.6**	**29.6**	**29.6**	**29.3**	**29.3**
Revenue	34.1	30.4	28.9	29.1	29.1	29.1	28.8	28.8
Tax Revenue	**23.4**	**20.3**	**19.3**	**19.1**	**19.2**	**19.4**	**19.3**	**19.4**
Mineral Income Tax	3.9	1.4	2.7	2.9	2.9	2.9	2.9	2.8
Non-Mineral Income Tax	5.3	5.1	5.2	5.1	5.2	5.2	5.3	5.4
Customs Pool (SACU)	8.9	9.0	6.0	5.7	5.7	5.8	5.7	5.8
Sales Tax/VAT	5.0	4.5	5.2	5.2	5.2	5.2	5.2	5.2
Other taxes, incl. export duties	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Non Tax Revenue	**10.7**	**10.1**	**9.6**	**10.0**	**9.8**	**9.7**	**9.5**	**9.4**
Mineral Royalties and Dividends	7.7	7.6	7.4	7.8	8.1	8.0	7.8	7.6
Interest receipts	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Other Property Income, of which	1.6	1.3	0.9	0.8	0.4	0.3	0.3	0.4
o/w BOB revenue	1.5	1.1	0.7	0.7	0.3	0.3	0.3	0.3
Fees and charges	1.3	1.2	1.3	1.3	1.3	1.3	1.3	1.3
Grants	**0.7**	**1.0**	**0.3**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
Expenditures and Net Lending	**40.2**	**44.6**	**39.4**	**36.7**	**33.9**	**31.7**	**30.3**	**29.0**
Recurrent	**27.3**	**29.1**	**26.9**	**25.7**	**24.2**	**23.2**	**22.4**	**21.9**
Wages and Salaries	10.0	10.5	9.1	8.7	8.1	7.7	7.4	7.2
Interest	0.3	0.4	0.7	0.7	0.8	0.9	1.0	1.1
Domestic Interest	0.2	…	0.5	0.3	0.3	0.4	0.4	0.5
External Interest	0.1	…	0.2	0.4	0.5	0.6	0.6	0.6
Other	17.0	18.2	17.1	16.3	15.3	14.5	14.0	13.6
Development Expenditure	**13.1**	**14.7**	**12.0**	**11.1**	**9.8**	**8.7**	**7.9**	**7.2**
Net lending	**-0.2**	**0.8**	**0.4**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**
Overall Surplus/Deficit	**-5.4**	**-13.3**	**-10.2**	**-7.1**	**-4.3**	**-2.1**	**-0.9**	**0.3**
Primary surplus/deficit	-5.0	-12.8	-9.5	-6.4	-3.5	-1.2	0.1	1.3
Financing	**5.4**	**13.3**	**10.2**	**7.1**	**4.3**	**2.1**	**0.9**	**-0.3**
External borrowing, net	-0.1	7.2	1.3	1.0	1.4	1.1	1.1	1.1
New borrowing	0.2	7.6	1.6	1.3	1.8	1.6	1.7	2.3
Amortisation (- entry)	-0.3	-0.4	-0.3	-0.3	-0.4	-0.5	-0.6	-1.2
Domestic borrowing, net	1.5	0.7	-0.8	0.3	1.6	1.8	1.0	-0.6
New borrowing	2.2	3.0	1.9	2.7	3.1	3.9	3.5	2.7
Amortisation (- entry)	-0.7	-2.3	-2.7	-2.3	-1.5	-2.1	-2.6	-3.3
IMF Transactions	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0
Other Financing	-1.2	-2.5	0.0	0.0	0.0	0.0	0.0	0.0
Change in Cash Balances in GIA /2	5.3	5.0	9.7	5.9	1.4	-0.7	-1.1	-0.7
Memorandum items								
Mineral revenue (% of GDP)	*11.6*	*9.0*	10.1	10.7	11.0	11.0	10.7	10.4
Non-mineral, non-SACU revenue (% of GDP)	*12.1*	*11.3*	12.2	12.0	12.0	12.1	12.1	12.2
NDP10 Cumulative balance (in billions of 2008/09 Pula)		*-11.0*	-20.0	-26.6	-30.9	-33.1	-34.1	-33.8
Non-mineral fiscal balance (% of non-mining GDP)	*-28.7*	*-35.5*	-32.4	-28.9	-24.3	-20.4	-18.1	-15.7
Government Investment Account (in billions of Pula)	*27.6*	*20.5*	12.6	6.7	5.3	6.6	8.5	10.0
Government Investment Account (% of GDP)	*31.6*	*23.1*	12.5	5.9	4.2	4.6	5.5	6.0
External debt & guarantees (% of GDP) /3	…	*13.0*	20.0	20.0	20.0	20.0	20.0	20.0
Domestic debt & guarantees (% of GDP) /3	…	*5.8*	4.4	4.3	5.4	6.6	7.0	5.9
Total debt & guarantees (% of GDP)	…	*18.7*	24.4	24.3	25.4	26.6	27.0	25.9

Source: Author's calculation.
1/ Estimates.
2/ A negative figure indicates an increase in the cash balance and vice versa.
3/ Data for 2008/09 do not include guarantees in the absence of information.
4/ Net of government gross assets (GIA balance and lending through RSF/PSDF) and gross liabilities (domestic and external debt). Excluding guarantees.

With the combination of low revenue and large expenditure, the fiscal outcomes in the early years of the Plan would be a large deficit. In particular, the fiscal deficit in 2010/11 is projected to be large, about 10.2 percent of GDP. This would be the third consecutive year of a fiscal deficit since 2008/09. The fiscal gap would be closed by a combination of external and domestic borrowing and draw-down on the fiscal savings. However, this strategy, including the provision of the loan guarantee related to the Morupule B project, would raise the government's stock of external debt and guarantees to 20 percent of GDP in 2010/11.

Provided that the government compresses spending as firmly and ambitiously as envisaged in NDP10, the overall fiscal position would improve rapidly. Even so, however, a fiscal surplus is unlikely to emerge until in the final year of the Plan. The projected cumulative deficit during the Plan would amount to P 34 billion (equivalent to 35 percent of 2008/09 GDP), in sharp contrast to the cumulative surplus of P 14 billion during the NDP9 period, both expressed in 2008/09 Pula. Since the statutory external debt limit would become binding by end-2010/11, thereafter new foreign borrowing by the government would be limited to a small amount every year, only to close the space created by GDP growth and principal repayments. As the government relies more heavily on fiscal reserves, the balance of the GIA would fall sharply from 23 percent of GDP at end-2009/10 to a mere 6 percent by the end of the Plan. However, growth of domestic debt, including guarantees, would be contained. Next we discuss the longer term implication of the Baseline Scenario.

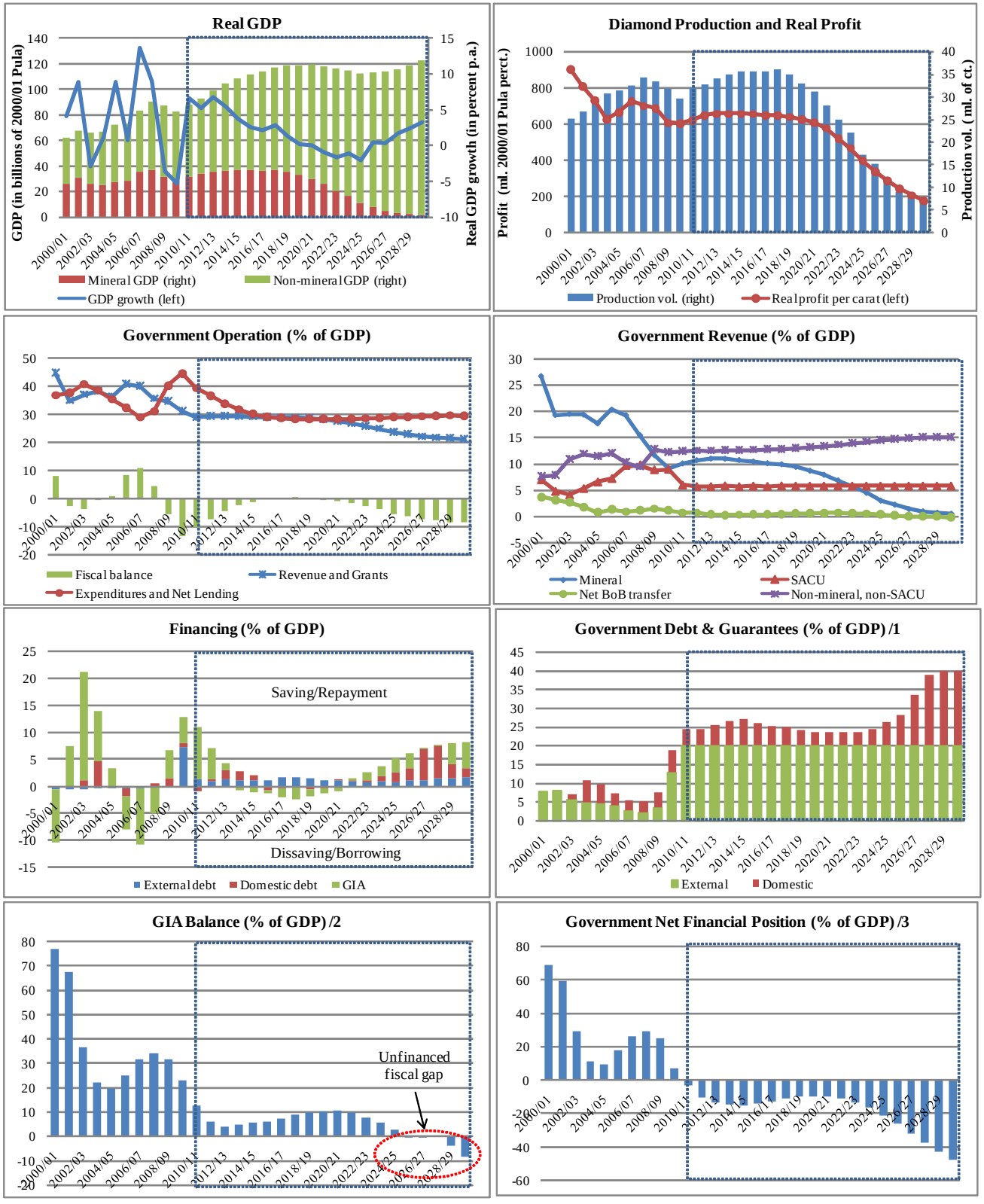
Medium-term Sustainability Assessment

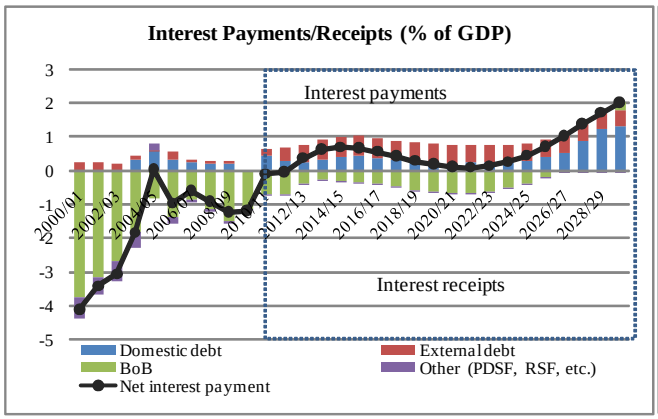
The projection results suggest that in the absence of decisive policy actions Botswana's current fiscal stance is unlikely to be sustainable over the longer term (Panel 1). There is a real danger that the continuation of the current fiscal policy would lead to unsustainable outcomes that may threaten Botswana's macroeconomic stability.

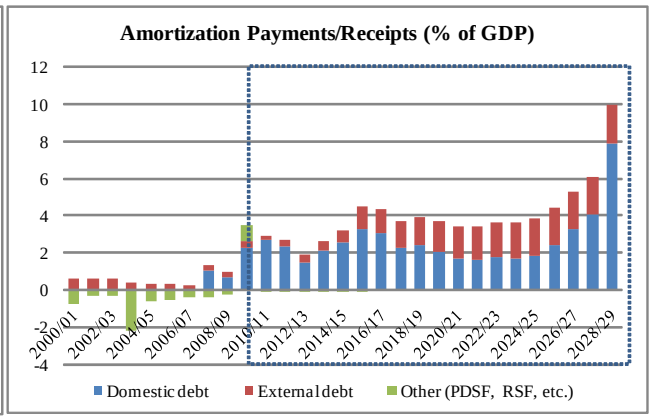
Unless other revenues increase robustly to fully offset the declines in mineral and SACU revenues, the overall government revenue would begin to fall, once the existing diamond reserves begin to be depleted from sometime in the 2020s. Although Botswana is likely to attain a comfortable fiscal position during NDP11 owing to the Cut 8 project, this would be a temporary development. As revenue begins to fall when ore from the Cut 8 project starts being exhausted, a fiscal deficit would begin to widen. At first, the government could finance the deficit by the combination of running down of fiscal savings and domestic borrowing. Yet once the GIA is depleted around 2025/26, the government would have no option but tap the domestic sources more heavily until the statutory debt limit is quickly reached in 2028/29.

At this point, deficit financing would become extremely constrained under the existing legal framework, since the Bank of Botswana Act (1996) limits central bank financing of the deficit to 5 percent of government average revenue for the preceding three fiscal years (up to 10 percent when the limit is temporarily waived). In 2028/29, a fiscal gap of about 3.8 percent of GDP (or 48 percent of the deficit) would remain unfunded. Over time, the unfinanced portion of the fiscal deficit would continue to grow. While this may be a remote possibility in Botswana, governments in a similar situation have in the past resorted to (i) extensive use of central bank advances by effectively rolling over the short-term facility; (ii) creative interpretation of legislation concerning the government's borrowing limits; (iii) accumulation of arrears (salary, pension, supplier arrears as well as repudiation of contractual obligations) to finance the deficit; and/or (iv) extensive use of off-budget facilities.

Panel 1. Medium-term Fiscal Projection: Baseline Scenario







Source: Author's calculation. Dotted boxes suggest projections.
1/ Data before 2009/10 exclude guarantees.
2/ Negative GAI values suggest unfinanced fiscal deficits.
3/ Net of government gross assets and gross liabilities. Guarantees are excluded.

According to this Baseline Scenario, the government would fall into a net debtor position in the second year of the Plan (2010/11), that is, the value of its gross assets (GIA balance and outstanding loans through PDF, RSF) is smaller than the value of its gross liabilities (public external and domestic debts). Thereafter, Botswana is unlikely to regain the net creditor status. By the end of the projection period, the government's net debt, including the unfilled fiscal gap, would exceed 47 percent of GDP.

Note that the unsustainable fiscal position projected above is not caused by the global crisis that started in late 2008. Rather, Botswana's fiscal vulnerability rests on its dependence on a non-renewable natural resource, which will be depleted sometime in the future. The size of the projected results is only for indicative purposes, especially in the distant future because of significant uncertainties surrounding the macroeconomic assumptions. The uncertainties are most significant in terms of the prospects for diamonds, but also because the accounting framework employed here cannot directly capture various behavioral relationships. For the latter, for instance, the large investment spending in the initial years of the Plan may boost private sector growth in the NDP11 period, raising non-mineral tax revenue and improving the fiscal prospects. Alternatively, as Botswana continues to run large fiscal deficits, external creditors may revise Botswana's country risks upwards. The external borrowing cost may rise, putting upward pressure on the budget. In the case of domestic borrowing, private sector growth may be severely hampered if government's borrowing led to crowding out of private investment. The next subsection will address these drawbacks by performing sensitivity analysis.

3.2.2 Sensitivity Analyses

How would the Baseline fiscal paths respond to changes in key assumptions? We carry out the sensitivity analysis by varying key assumptions *ceteris paribus* first, and then in combination. The analysis is discussed in greater details in Annex 2. This section briefly summarizes the main results.

The sensitivity analysis indicates that the projected Baseline fiscal paths could look dramatically different depending on the assumptions on the diamond sector's performance and the public sector wage bill. Other things equal, lower diamond exports would cause a drop in mineral revenue, reducing fiscal revenue and hurting the overall fiscal position. For example, 10 percent lower diamond exports, compared with the Baseline Scenario, would raise the cumulative fiscal deficit from P34 billion to P 43 billion (expressed in the 2008/09 Pula). Faced with the binding external debt and guarantee limit, the government would resort to the GIA and domestic borrowing. As a result, fiscal reserves would be

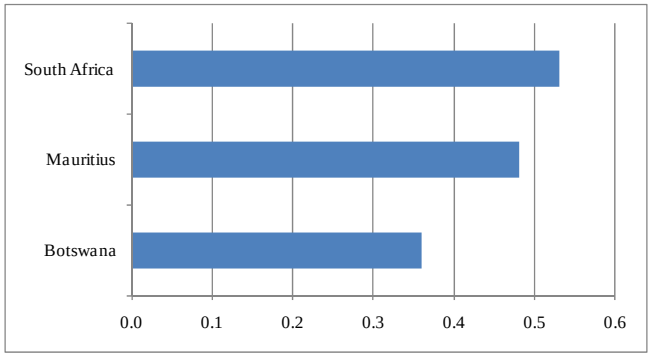
depleted by 2012/13 compared with 2024/25 under the Baseline Scenario, while domestic debt would grow. Higher diamond exports than envisaged in the Baseline Scenario would brighten Botswana's fiscal prospects. Nonetheless, even under the most favorable scenario, the NDP10 cumulative fiscal position would likely remain negative.

The government's failure to adhere to the no net expansion policy of its establishment would similarly pose a significant fiscal risk. Simulation suggests that annual growth of 2.5 percent in the government establishment would have the same detrimental impact on the fiscal position as in the situation where diamond exports fall short of the Baseline assumption by 5 percent. With the declining mineral revenue, future fiscal adjustments will critically hinge on the government's ability to contain the wage bill.

The projected results are not significantly sensitive to the non-mining sector's performance, in that higher non-mining GDP growth would do little to improve Botswana's medium-term fiscal prospects. One percentage point higher non-mining GDP growth than the Baseline assumption would reduce the end-NDP10 cumulative fiscal deficit from P 34 billion only to P 31.4 billion.

Indeed, Botswana's revenue collection from the non-mining sector is very low for its income level. The average effective VAT rate during 2002/03-2008/09—derived by dividing VAT collection by GDP—is 3.8 percent, much lower than the statutory rate of 10 percent (Table 5). VAT revenue productivity—measured by VAT revenue in percent of GDP divided by the statutory VAT rate—is 0.38, which compares less favorably with South Africa's 0.53 and Mauritius' 0.48 (Figure 7). Problems in revenue administration, tax enforcement and exemptions are the likely culprits for the heavy leakages in VAT collection.[24] As regards non-mineral income tax, the comparison is more difficult since the breakdown of personal income tax and non-mining company tax is unavailable. The average effective tax rate for non-mineral tax is low, at 7.6 percent during the same period, compared with 45.2 percent on the mining sector, and the statutory corporate tax rate of 25 percent (15 percent as basic company tax for resident companies, plus a 10 percent as additional company tax). This finding has a powerful policy implication. With the current tax arrangement, economic diversification away from diamonds would not generate enough non-mining, non-SACU revenue to offset falling mineral and SACU revenues in the future. Botswana's relatively low revenue productivity suggests that there is scope to strengthen revenue collection.

Figure 7. VAT Revenue Productivity



Source: Author's calculation based on various IMF staff reports.

Table 5. Effective Tax Rates (2002/03-2008/09 Average) /1

	Mineral revenue	Non-mining income tax	VAT
Effective tax (in percent)	45.2	7.6	3.8
Proxy of tax base	Mining GDP	Non-mining GDP	GDP

Source: Author's calculation.

1/ Since a major change was introduced in the tax structure (rates, coverage, and exemptions) in 2002/03, the effective tax rates before 2002/03 are not comparable.

[24] For example, fuels are exempt from VAT in Botswana. Mineral products are zero-rated.

4. Alternative Fiscal Strategy for Botswana

The above analysis points to the need for bold action, in order to preserve Botswana's long-term fiscal sustainability. The projection results and their policy implications are stark. Botswana has little time to left to start the deep seated structural changes, starting with the public sector. These changes should be well underway before the long-term decline in diamond exports sets in, and fiscal reserves are depleted. The global crisis of 2008 is an opportunity to set in motion these needed changes.

What are some of the options available to policymakers? This section will consider alternative fiscal policy strategies to bring Botswana's fiscal stance to a sustainable path.

4.1 Revenue Enhancing Scenario

The first alternative scenario examines the potential for revenue enhancing measures to bring Botswana's fiscal stance closer to a sustainable path. Today Botswana has a limited control over government revenue, as the levels of SACU receipts and BoB transfers, and to a great extent, mineral revenue, are influenced heavily by external factors. While good progress has been made on this front, especially since 2002, non-mining, non-SACU revenue is limited as has been shown earlier.

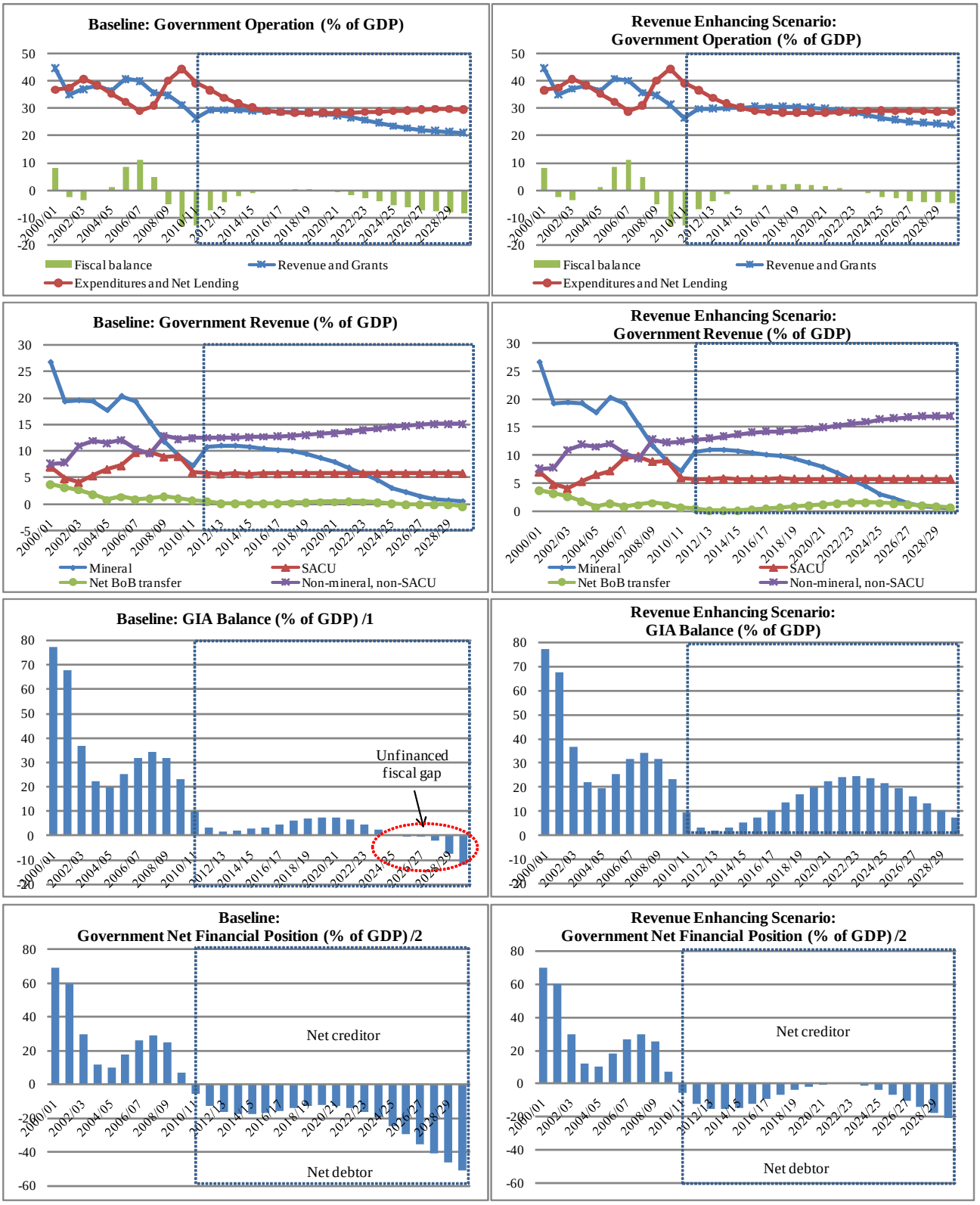
Let us assume that the government will embark on tax administration reform in line with the IMF's technical advice (IMF, 2004) and that these efforts will result in, through greater tax enforcement and rationalization of exemptions: (i) an increase in VAT revenue productivity gradually to 0.5 in 2015/16;[25] and (ii) an increase in the effective non-mining tax rate by 0.2 percentage points every year, from 7.6 percent to 9 percent in 2015/16. We maintain all other baseline assumptions, including mining and non-mining growth projections, as well as the government's adherence to the no net increase policy of its establishment, expenditure compression, and borrowing strategy. How would this affect Botswana's medium-term fiscal position?

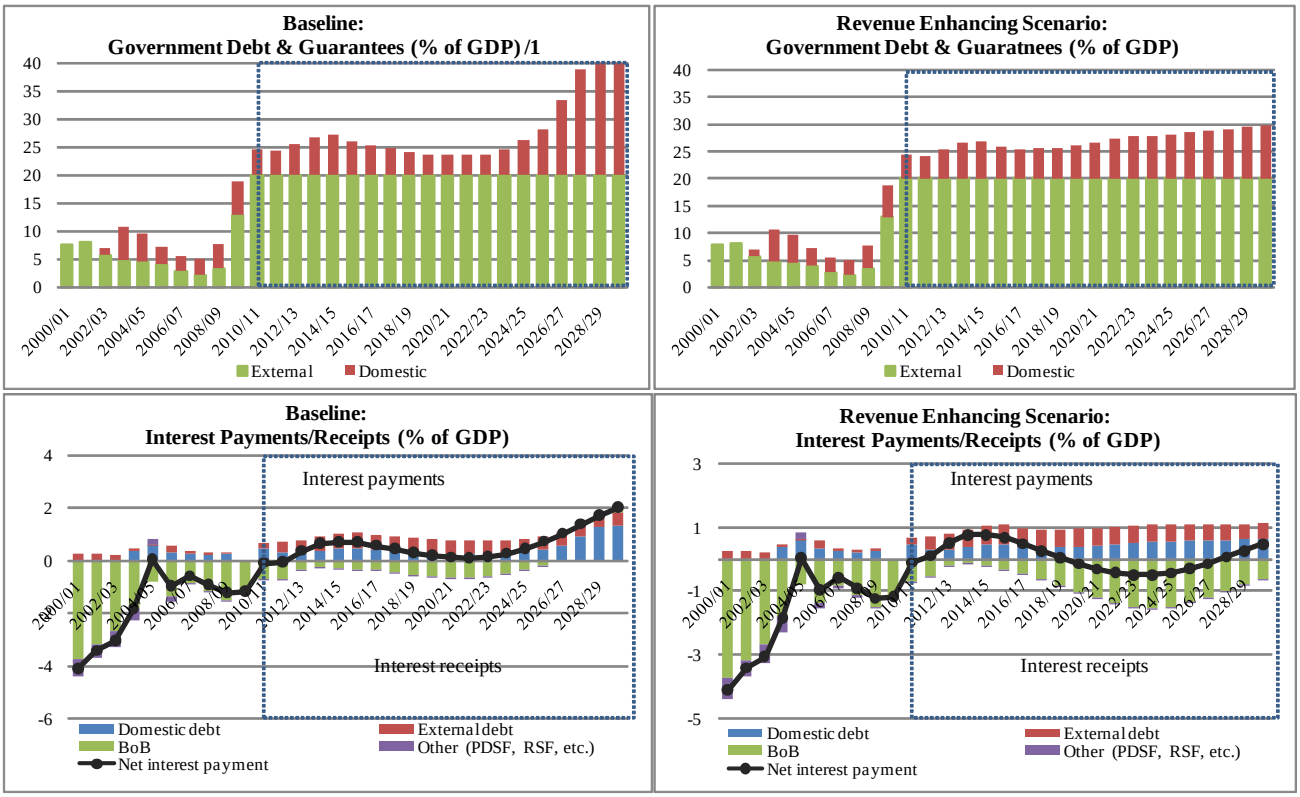
The revenue enhancing effort would raise non-mineral non-SACU revenue (see Panel 2). Overall revenue would decline more slowly than in the Baseline Scenario as a result, providing a breathing space for the needed fiscal adjustments. However, the improvement in revenue collection could replace the declining mineral revenue only partially, and overall government revenue would continue to fall, albeit at a slower speed, widening the fiscal deficit. Government debt would accumulate more slowly than under the Baseline Scenario. Although the GAI is unlikely to be depleted during the projection period, the long term implication to the net financial position is clear. The story line of the Baseline Scenario would be repeated under this scenario, albeit with a lag.

The above results indicate that ensuring medium-term fiscal sustainability would require further policy action. Given the extraordinary profitability of diamonds, no other source of income could perhaps fully compensate for the declining mineral revenue. That is, the fiscal adjustment would also need to be addressed from the expenditure side. In particular, it would be necessary to bring down public expenditure to levels that are more in line with long-term revenue prospects. At the same time, spending should to be geared towards promoting long-term development of non-diamond sectors, which could not only help diversify the economy, but also expand the domestic tax base. The next scenario will examine if this strategy could bring Botswana's fiscal position to a sustainable path.

[25] This assumption is based on cross country experience which indicates that when designed well and implemented properly, VAT yields an effective rate of about half of the statutory rate (i.e., productivity of 0.5).

Panel 2. Comparison: Baseline and Revenue Enhancing Scenarios





Source: Author's calculation. Dotted boxes suggest projections.
1/ Negative GAI values suggest unfinanced fiscal deficits.
2/ Net of government liabilities (external and domestic) and assets (GIA and RSF/PDSF loans). Guarantees are excluded.

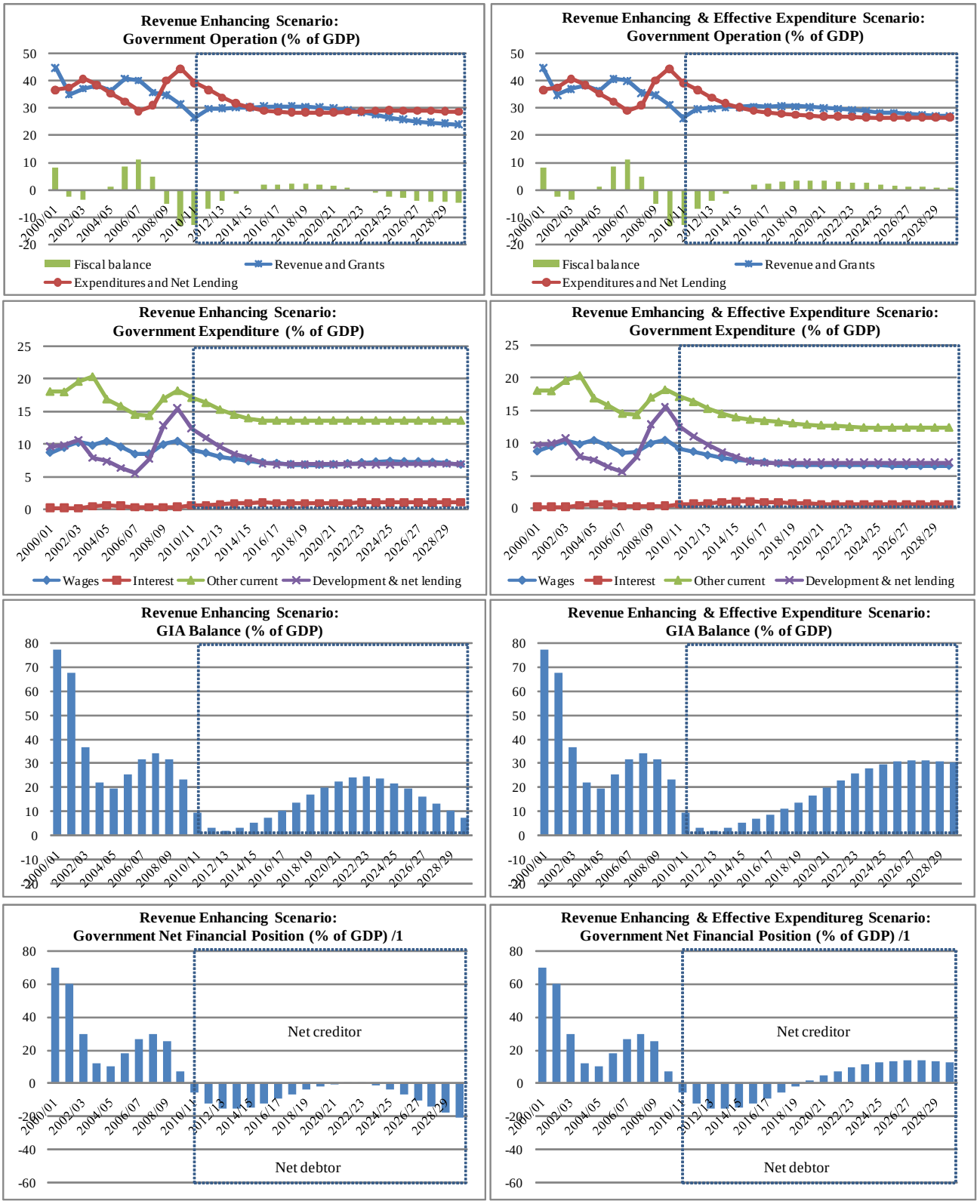
4.2 Revenue Enhancing & Effective Spending Scenario

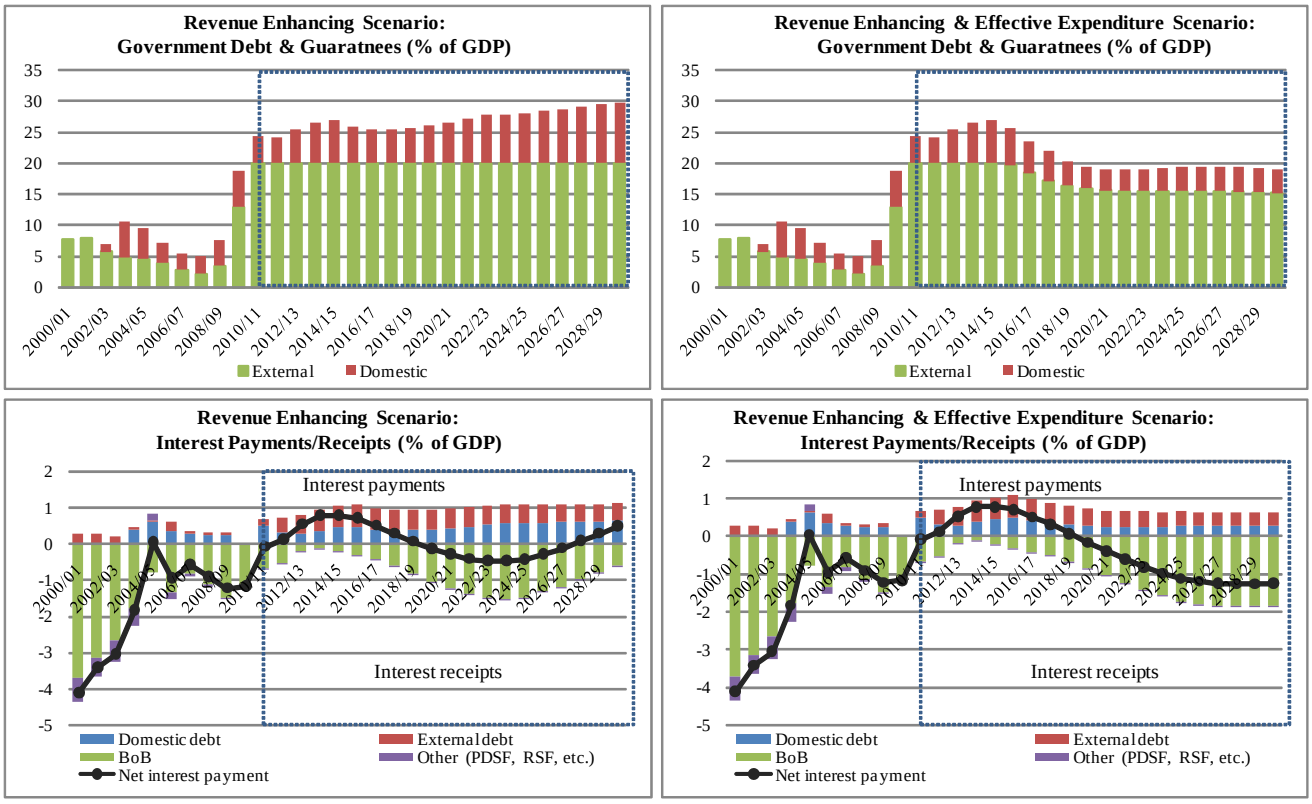
The second alternative scenario explores a strategy, in which the government tries to boost the development of the non-diamond sector, by maximizing the effectiveness of spending through greater administrative efficiency and expenditure rationalization. We assume that these efforts will, with some lag, raise the annual growth rate of non-mining GDP from 2016/17 onwards. The 20-year average growth rate of non-mining GDP is assumed to rise from the Baseline assumption of 4 percent to 4.8 percent.

As the non-mining sector grows and the economy becomes more diversified, Botswana could reform the tax regime so that the tax burden is more fairly borne across sectors. We assume that corporate tax will be raised from 25 percent to 30 percent, increasing the effective non-mining income tax rate to 11 percent in the medium term. All other assumptions and policy strategy, including the revenue-enhancing measures introduced earlier and the government's hiring policy, are kept unchanged.

With the combination of revenue enhancement measures and more effective public spending, the long-term fiscal position would be stabilized at a comfortable level (see Panel 3). Higher non-mining growth and tax policy reform would raise non-mineral non-SACU revenue. Overall revenue would be stabilized at 27-30 percent of GDP. Expenditure would be lowered to the range consistent with the long-term revenue prospects, but without compromising the quality of public services, supported by the productivity increase in, and rationalization of, government spending. The government could build up fiscal reserves, while lowering the level of public debt. The net financial position would return to a positive range,

Panel 3. Comparison: Revenue Enhancing and Effective Public Spending Scenarios





Source: Author's calculation. Dotted boxes suggest projections.
1/Net of government liabilities (external and domestic) and assets (GIA and RSF/PDSF loans). Guarantees are excluded.

and the government would return to be a net interest recipient in 2018/19, meaning that interest receipts from RSF/PSDF and GIA would exceed its interest payments on public debt.

The policy assumptions for the above scenario are ambitious. In the event the projected non-mineral, non-SACU revenue growth is not realized, the government would have to adopt a strategy to lower spending even further. As before, the size of the projected results is for indication only. With considerable uncertainties regarding the future of diamonds and the private sector's response to policy interventions, a precise medium-term projection is extremely challenging. The scenario presented above is merely one example of a sustainable fiscal path. Different scenarios will bring about different trajectories of the fiscal balance, debt ratios, and the net financial position. For this reason, it is important for the government to regularly conduct scenarios and sensitivity analysis of the medium-term fiscal position, as new information becomes available.

5. Policy Discussions

5.1 Botswana's Policy Priorities

In preparation for the eventual depletion of diamonds, Botswana will need to approach the required fiscal adjustment with a combination of revenue and expenditure measures. As mineral revenue begins to fall, efforts need to be stepped up to boost non-mining, non-SACU revenue. In light of the very low effective tax rates, there is enough scope to realize Botswana's revenue potential through strengthening of revenue administration and greater tax enforcement. Rationalization of the existing tax exemptions is also needed,

as exemptions inherently give rise to higher administration cost and exemption creep. For example, there is little rationale for exempting transport fuels from VAT, given the highly inelastic nature of fuels.[26]

On the expenditure side, there is an urgent need to improve the effectiveness of public spending considerably, with a view to delivering public services within a more constrained budget envelope.[27] Besides trimming the overall wage bill, as envisaged in NDP10, this requires a thorough review of spending programs to evaluate and rationalize them.

At the same time, efforts need to be stepped up in building in-house capacity to regularly monitor macroeconomic developments and conduct fiscal analysis. Projections can be performed at various levels of complexity, but they should allow the government to identify emerging risks and vulnerabilities, internalizing them in policy formulations. To this end, a timely availability of reliable data will be critical.

These actions are necessary not only from the fiscal sustainability point of view, but also from the point of view of facilitating private sector activities and accelerating growth of non-diamond sectors, that is, maintaining Botswana's living standard. These efforts will take time to yield results. The current global crisis is an opportunity to start a structural transformation of Botswana's economy. This transformation needs to be well under way before the long-term decline in diamond exports sets in. A timely response to Botswana's emerging fiscal challenges would make a transition less painful, before the current fiscal policy stance leads to unsustainable outcomes that would require significantly large and more painful adjustments later.

5.2 Botswana's Fiscal Rules

Over time Botswana has adopted various formal and informal rules in an attempt to maintain fiscal discipline, especially, with regard to spending financed by mineral revenue. With the change in policy emphasis, over time, some rules have been phased out. The rule to limit public spending to 40 percent of GDP is no longer in use. Neither is the Sustainable Budget Index (SBI). Currently, the remaining rules are the statutory ceilings of 20 percent of GDP for government external and domestic debt and guarantees, respectively. Should Botswana adopt additional rules to ensure medium-term fiscal sustainability?

The statutory debt and guarantee ceilings can continue to serve as effective instruments to in restraining the size of overall fiscal deficits. Rather than introducing new rules, Botswana could benefit more from implementing the existing rule effectively. In this regard, focus needs to be given to addressing obstacles that hamper the effective implementation of the rules.[28] Specifically, this requires a more specific definition of "government debt" in the Stock, Bonds and Treasury Act (1995), without which the rule could be interpreted in an inconsistent manner, or could potentially be abused.[29] As important as the definition is the ability to monitor the adherence. Again, this requires the timely availability of reliable fiscal, debt and macroeconomic data, in particular, within the period to which the rule is applied.

Botswana could also consider the use of the non-resource fiscal balance as a benchmark to evaluate the fiscal stance. Recent literature shows that, particularly from a short-term stabilization perspective, the use of non-resource balance, scaled by non-resource GDP, provides a useful guide by delinking the fluctuations associated with the developments in mining. Indeed, in countries such as Norway, budget

[26] There is a specific tax on transport fuels, but it is very low (currently P 0.21 for petrol, P 0.12 for diesel per liter).
[27] Botswana's social outcomes, which fall short of those expected in a middle income country despite generous funding, may be a reflection of expenditure effectiveness.
[28] See Kopit (2001) for the preconditions considered as key to a successful implementation of fiscal rules.
[29] For exampe, the Act is not clear about the level of government (central government only or inclusive of local authorities, statutory or wholly-owned government corporation, government agency, etc) and the coverage of debt (inclusive of concessional and/or short-term debt, commitment or disbursement based, etc.).

documents and fiscal policy discussions focus primarily on the non-mineral balance and its impact on the domestic economy.

6. Conclusion

This paper has analyzed Botswana's medium-term fiscal sustainability in view of declining mineral revenue. We have shown that, in the absence of serious policy corrections, Botswana's current policy strategy is unsustainable over the longer term. There is a real danger that the continuation of the present fiscal policy would lead to unsustainable outcomes that could threaten Botswana's macroeconomic stability and reputation as Africa's success story.

Ensuring medium-term sustainability of Botswana's public finances requires stronger revenue collection, through improved revenue administration, greater tax enforcement, and the rationalization of tax exemptions in order to realize the full revenue potential. Opportunities also exist to generate more revenue from the non-mining sector through changes in the tax regime. At the same time, the government needs to maximize the effectiveness of public expenditure so as to allow service delivery with less money. A greater control over the public sector wage bill is critically important. In-house capacity for macroeconomic monitoring and fiscal analysis needs to be enhanced further.

Botswana is approaching a period of transition and structural changes. Looking ahead, growth of a dynamic non-mining sector is crucial for Botswana not only from the fiscal sustainability point of view, but from the point of view of achieving balanced development that will create jobs and deliver durable reduction in poverty and inequality. Fiscal policy will have to play a central role in this process.

Annex 1. Summary of Baseline Assumptions

A1.1 Macroeconomic Assumptions

Real mining GDP growth rate	See Text. Diamond price and production volume are adjusted to be consistent with real growth rates of mining GDP.
Real non-mining GDP growth rate	Derived from the real growth rates of non-mining private sector and government provided in revised NDP 10 Table 6.1.
Real GDP growth rate	Derived from real mining and non-mining GDP growth rates.
Nominal GDP	Derived from real growth rates and inflation. See the table below
Inflation	Projections taken from IMF Staff Report (July 2010) in CY converted to FY.
Exchange rate	Projections taken from IMF Staff Report (July 2010) in CY converted to FY.
Nominal US interest rate	US long-term bond yeild. Projections taken from IMF WEO (April 2010) in CY converted to FY.
Nominal interest rate on new external borrowing	Taken from GDF (CY converted to FY). See table below.
Nominal interest rate on domestic government debt	Assume a spread of 2 percentage points over the nominal domestic interest rate. See table below.

	2010/11	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**
Nominal GDP (millions of Pula)	101,252	113,053	127,640	141,971	155,234	167,868
Nominal mining GDP (millions of Pula)	35,841	40,689	45,334	49,241	52,631	55,420
Nominal Non-mining GDP (millions of Pula)	65,411	72,365	82,306	92,730	102,604	112,447
Diamond production (in millions of carats)	32.0	32.7	34.0	35.0	35.5	35.5
Nominal US interest rate (percent p.a.)	4.7	5.8	6.3	6.4	6.5	6.5
Nominal interest on new government external debt (percent p.a.)	1.4	2.5	4.1	4.2	4.5	4.5
Nominal interest on government domestic debt (percent p.a.)	9.4	8.1	7.7	7.5	7.4	7.3

A1.2 Fiscal Policy Assumptions

Revenue	
Revenue policy	No new revenue policy. Revenue measures introduced in the 2010/11 Budget are assumed to remain the same. Fees and charges are assumed to grow at the inflation rate (stable in real term).
Expenditure	
Wage bill	As per NDP10, it is assumed that there will be no net increase in established posts until 2015/16. From 2016/17, the establishment is assumed to grow, in net terms, by 0.5 percent each year. No cost of living adjustment in 2010/11 in line with the 2010/11 Budget. Thereafter, wages will be adjusted annually at the inflation rate.
Other recurrent spending	Assumed to grow at the rate calculated from Table 6.6. The 2010/11 figure is taken from the Budget (Table V).
Development expenditure	For 2010/11, the number is taken from the Budget table and thereafter it is assumed to grow at the rate calculated from NDP10 Table 6.7.
On-lending	No new on-lending.
Financing	
External financing	New external borrowing in 2010/11 as provided in the Budget table. The government is assumed to comply with the legal external debt and guarantee limit of 20 percent of GDP. As external government debt and guarantees exceed the limit by end-2010/11, no new borrowing is assumed to take place until subsequent GDP growth and repayments provides room for additional external borrowing. Until the debt and

	guarantee ceiling becomes binding, it is assumed that the government prefers external borrowing to domestic borrowing due to lower costs.
Domestic financing	Borrowing plan for 2010/11 provided by the MFDP (P 1.9 billion) as T bills and government bonds. The government complies with the legal domestic debt and guarantee limit of 20 percent of GDP. Due to the high cost and fears of crowding out, the government is assumed to prefer drawing down on the fiscal savings to domestic borrowing.

A1.3 Fiscal Projections

Revenue	
Mining royalties, dividends, and mineral income tax	Projected by assuming 60% of diamond exports as government's share of Debswana's profit (based on historical pattern).
Non-mining income tax	Projected by applying the effective tax rate of 8% (historical average) on non-mining GDP.
Export duties	Assumed to grow at inflation rate.
SACU revenue	Projected based on the medium-term projection of SACU revenue pool (available from South Africa's medium-term fiscal framework, October 2009) and historical average of Botswana's share in the revenue pool. After 2012/13, SACU revenue is assumed to grow at the rate of nominal GDP growth.
VAT	To factor in the VAT increase from 10% to 12% effective in April 2010, the historical VAT effective rate (4.3%) is adjusted upwards by 20% to 5.2%. VAT collection is then projected by applying 5.2% on nominal GDP.
Other taxes	Assumed to grow at the nominal GDP growth rate.
Interest receipts	2010/11 figure taken from the Budget. For subsequent years, projected by applying the effective interest rate of 3.8% (effective rate for 2010/11) on outstanding balance of PSDF/RSF/DF at end of previous FY.
BoB revenue	Projected by applying the projected US nominal interest rate on the balance of GIA outstanding at end of previous FY, assuming that the major part of the assets is invested in fixed-income instruments.
Fees and charges	Assumed to grow at the nominal GDP growth rate.
Grants	Assumed to be 0.5% of GDP every year.
Expenditure	
Wages and salaries	Projected based on actual establishment and average salary per person per year. Establishment in 2009/10 estimated by assuming that establishment in 2008/09 (estimate provide in NDP10, Table 6.11) grew by 4.4% (average growth rate during NDP9). 2009/10 establishment is derived by adding newly established posts (1,610) to the estimated establishment in 2009/10. For simplicity, it is assumed that there will be no vacancy filling.
External interest payment	Derived by constructing payment schedule for each of Botswana's external loans. Payment schedules are calculated using original currency and converted to US$ using projected exchange rates (IMF 2010) up to 2014/15, and thereafter assume the same rates as 2014/15 throughout. Interest payments on new external borrowing after 2009/10 are projected by assuming nominal interest rate on new external borrowing and balance of new borrowing at end of preceding fiscal year.
Domestic interest payment	Projected by applying projected domestic interest rate on outstanding balance of domestic debt at end of preceding fiscal year.
Repayment of PSDF/RSF	Assume repayment of P 125 million every year.
Financing	
Amortization of external debt	Derived from the payment schedules constructed for each of 101 loans, based on the information provided by the Common Wealth Secretariat. For new borrowing after 2010/11, assume 5% of outstanding balance of preceding FY is amortized.
Amortization of domestic debt	Assume all government securities have maturity of 2 years.
Changes in cash balance	Assume this reflects only capital paid into (negative) and withdrawal from (positive) from the Pula Fund.

Annex 2. Sensitivity Analysis

This Annex provides the details of the sensitivity analysis carried out in Section 3.2.2. The analysis is conducted by simulating the following six variables *ceteris paribus* first, and then in combination (Table A2. 1).

Table A2. 1. Summary of Sensitivity Analysis /1

Assumptions	Changes introduced to Baseline Assumptions
Diamond sector performance	• 5% higher diamond exports • 10% higher diamond exports • 15% higher diamond exports • 5% lower diamond exports • 10% lower diamond exports • 15% lower diamond exports
Non-mining GDP growth	• 1 percentage point lower growth • 1 percentage point higher growth • 2 percentage point higher growth
Pula/US dollar nominal exchange rate	• 15% appreciation in 2010/11 • 30% appreciation in 2010/11 • 15% depreciation in 2010/11 • 30% depreciation in 2010/11
Domestic interest rate	• 1 percentage point higher • 2 percentage points higher • 3 percentage points higher
Cost of new external borrowing	• 1 p ercentage point higher • 2 percentage points higher • 3 percentage points higher
Size of government establishment	• 1% annual growth of government establishment • 2% annual growth of government establishment • 3% annual growth of government establishment
Combination	• Combination of (i) 15% lower diamond exports; (ii) 4.4% (net) growth of government establishment every year; and (iii) nominal Pula appreciation of 15% against the US dollar.

1/ Unless otherwise indicated, changes in assumptions are for the remainder of NDP10.

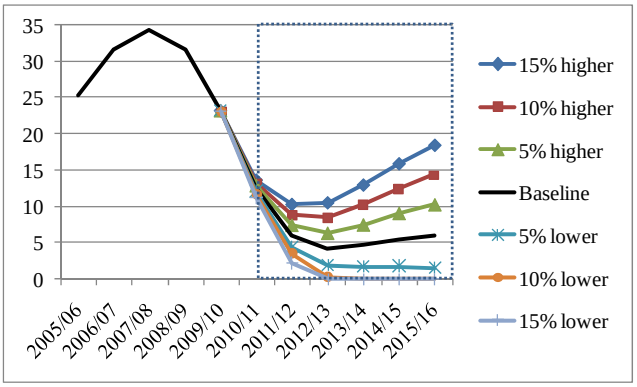
For the immediate policymaking purposes, here we focus primarily on the details of fiscal projection over the 7-year Plan period, since changes in assumption did not fundamentally alter the result of Botswana's fiscal sustainability assessment discussed in Section 3.2.

A2.1 Diamond Sector Performance

Diamond sector performance is central to Botswana's fiscal outcome. Sensitivity analysis is carried out by assuming 5 percent, 10 percent and 15 percent (in nominal terms) lower diamond exports throughout the Plan period compared with the Baseline Scenario. Lower diamond exports occur through various combinations of production volume and prices. For example, a 15 percent decline in diamond exports could represent a combined effect of a10 percent fall in diamond production and a 5 percent decline in the export price of diamonds in a given year. While an assumption of a further decline of 15 percent may appear too pessimistic, such a situation could potentially occur should the recovery of the advanced economies stall. We also analyze upper case scenarios in which diamond exports are higher than the Baseline Scenario by 5 percent, 10 percent and 15 percent.

Other things equal, lower diamond exports would cause a large drop in mineral revenue, raising the fiscal deficit (Table A2. 2). A 5 percent decline in diamond exports would raise the cumulative fiscal deficit from P 34 billion to almost P 38.5 billion, both expressed in the 2008/09 Pula. Should diamond exports dip further by 15 percent, the cumulative deficit could reach P 48 billion (in the 2008/09 Pula), equivalentto 50 percent of 2008/09 GDP. Faced with the binding the external debt and guarantee limit, the government would draw on the fiscal savings to finance the deficit, while borrowing domestically. The GIA would be depleted in 2011/12 (Figure A2. 1), and thereafter domestic debt would rise rapidly (Figure A2. 2). The government's net liabilities would rise significantly, from 14 percent of GDP to 26 percent (Figure A2. 3).

Figure A2. 1. GIA Balance (in percent of GDP)



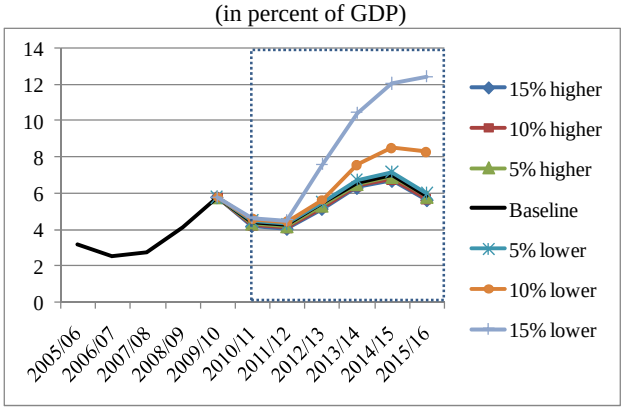
Source: Author's calculation.

Table A2. 2. Sensitivity Analysis: Diamond Exports

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Mineral revenue (in percent of GDP)						
15% higher diamond exports	11.0	11.7	12.0	12.0	11.7	11.4
10% higher diamond exports	10.7	11.3	11.7	11.6	11.4	11.1
5% higher diamond exports	10.4	11.0	11.3	11.3	11.1	10.8
Baseline	10.1	10.7	11.0	11.0	10.7	10.4
5% lower diamond exports	9.7	10.3	10.6	10.6	10.3	10.1
10% lower diamond exports	9.4	10.0	10.3	10.2	10.0	9.7
15% lower diamond exports	9.0	9.6	9.9	9.8	9.6	9.3
Fiscal balance (in percent of GDP)						
15% higher diamond exports	-7.9	-4.8	-1.9	0.3	1.5	2.8
10% higher diamond exports	-8.6	-5.5	-2.7	-0.5	0.7	2.0
5% higher diamond exports	-9.4	-6.3	-3.5	-1.3	-0.1	1.1
Baseline	-10.2	-7.1	-4.3	-2.1	-0.9	0.3
5% lower diamond exports	-11.0	-7.9	-5.2	-3.0	-1.8	-0.6
10% lower diamond exports	-11.8	-8.8	-6.1	-3.9	-2.7	-1.6
15% lower diamond exports	-12.7	-9.7	-7.0	-4.8	-3.7	-2.5
Cumulative fiscal balance (in billions of 2008/09 Pula)						
15% higher diamond exports	-18.3	-23.0	-25.0	-24.6	-22.9	-19.6
10% higher diamond exports	-18.9	-24.2	-26.9	-27.4	-26.6	-24.3
5% higher diamond exports	-19.4	-25.4	-28.9	-30.3	-30.3	-29.1
Baseline	-20.0	-26.6	-30.9	-33.1	-34.1	-33.8
5% lower diamond exports	-20.5	-27.8	-32.8	-35.9	-37.8	-38.5
10% lower diamond exports	-21.1	-29.0	-34.8	-38.7	-41.6	-43.3
15% lower diamond exports	-21.6	-30.2	-36.7	-41.5	-45.3	-48.0

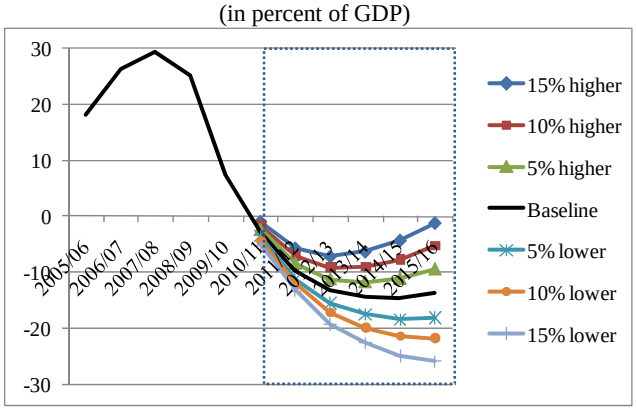
Source: Author's calculation.

Figure A2. 2. Government Domestic Debt & Guarantees /1
(in percent of GDP)



Source: Author's calculation.
1/ Data for 2005/06-2008/09 exclude guarantees due to lack of information.

Figure A2. 3. Government Net Financial Position
(in percent of GDP)



Source: Author's calculation.

Naturally, more favorable diamond assumptions would turn Botswana's fiscal prospects brighter. With 15 percent higher diamond exports, the fiscal position would return to a surplus in 2013/14, compared with 2015/16 under the Baseline Scenario. The government could save the surpluses in the GIA to build fiscal reserves, if it chose to continue with the domestic borrowing program. Notwithstanding, these surpluses would not be sufficient to fully offset the large deficits of the earlier years of the Plan. As a result, the cumulative fiscal position would remain negative, of P 20 billion (equivalent to 21 percent of 2008/09 GDP), compared with P 34 billion under the Baseline Scenario. Indeed, the simulation analysis suggests that balancing the NDP10 cumulative fiscal position would require diamond exports of, on average, US$5 billion every year for the remainder of the Plan. Put it another way, this scenario assumes 45 percent higher diamond exports assumed in the Baseline Scenario.

A2.2 Non-mining GDP growth

The second sensitivity test examines the impact of the non-mining sector's performance on the projected fiscal path. Four scenarios are considered here: one upper case scenario, in which the non-mining sector growth rate is one percentage point higher than assumed in the Baseline Scenario, for the rest of the Plan, and two lower case scenarios, in which non-minning growth is lower than the Baseline assumption by one percentage point and 2 percentage points, respectively.

The results (see Table A2. 3) suggest that different assumptions of non-mining GDP growth would have a very limited impact on non-mining, non-SACU revenue (excluding grants), suggesting that effective taxation on the non-mining sector is low. The average effective VAT rate during 2002/03-2008/09—derived by dividing VAT collection by GDP—is 3.8 percent, as opposed to the statutory rate of 10 percent. As regards non-mineral income tax, the comparison is more difficult since the breakdown of personal income tax and non-mining company tax is unavailable. The average effective tax rate for non-mineral income tax is low, of 7.6 percent during the same period, compared with 45.2 percent on the mining sector.

Table A2. 3. Sensitivity Analysis: Non-mining Growth Rates

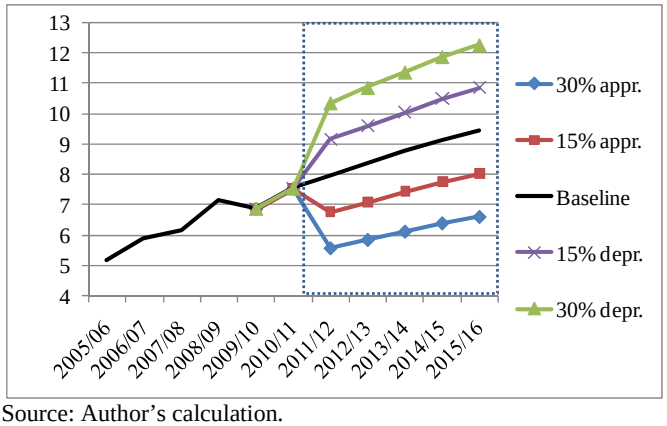
	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Domestic revenue (in percent of GDP)						
1 percentage point lower growth	12.1	12.0	12.0	12.0	12.0	12.1
Baseline	12.2	12.0	12.0	12.1	12.1	12.2
1 percentage point higher growth	12.2	12.1	12.1	12.1	12.2	12.3
2 percentage points higher growth	12.2	12.1	12.1	12.2	12.3	12.4
Fiscal balance (in percent of GDP)						
1 percentage point lower growth	-10.3	-7.4	-4.7	-2.6	-1.5	-0.4
Baseline	-10.2	-7.1	-4.3	-2.1	-0.9	0.3
1 percentage point higher growth	-10.0	-6.8	-3.9	-1.7	-0.4	0.9
2 percentage points higher growth	-9.9	-6.6	-3.6	-1.2	0.2	1.6
Cumulative fiscal balance (in billions of 2008/09 Pula)						
1 percentage point lower growth	-20.0	-26.8	-31.4	-34.0	-35.6	-36.1
Baseline	-20.0	-26.6	-30.8	-33.0	-34.0	-33.7
1 percentage point higher growth	-19.9	-26.3	-30.3	-32.1	-32.5	-31.4
2 percentage points higher growth	-19.8	-26.1	-29.8	-31.1	-30.9	-29.0

Source: Author's calculation.

A2.3 Pula/US dollar Nominal Exchange Rate

Next we consider the impact of different exchange rate assumptions on the Baseline fiscal paths. Changes in the Pula/US dollar exchange rate will impact Botswana's fiscal position through multiple channels.[30]

Figure A2. 4. Different Nominal Exchange Rate Assumptions
(Pula/US dollar)



Source: Author's calculation.

First, nominal depreciation of the Pula vis-à-vis the US dollar would boost mineral revenue in Pula terms although it would remain the same as a percentage of GDP. Second, a weaker Pula against the US dollar would raise Botswana's external interest payments in Pula terms, putting upward pressures on overall government expenditure. However, depreciation would also raise, in Pula terms, the return on the fiscal reserves that are invested in foreign assets, as well as foregin grants (assumed to be provided in the US dollar), raising government revenue. The net impact on the next external payment is not straight forward, and depends on the net external position of the government; the differential between the interest rate on external debt and the rate of return on the fiscal savings; and the amount of foreign grants offered to Botswana.

We consider three scenarios, in which the Pula appreciates/depreciates, in nominal terms, against the US dolar by 15 percent and 30 percent, respectively, at the beginning of 2011/12 from the level assumed in

[30] One can interpret nominal appreciation/depreciation of the Pula against the US dollar as the movement of the Rand vis-à-vis the US dollar, since the Pula is pegged to a basket of currencies with a heavy weight on the South African Rand.

the Baseline Scenario. From 2011/12 onwards, the Pula is assumed to follow the trend envisaged in the Baseline Scenario (see Figure A2. 4).

The results presented Table A2. 4 indicate that nominal depreciation of the Pula would lead to a slight improvement in the fiscal position through lower net external interest payments (i.e., net of the interest payment on public external debt and investment returns on fiscal savings). With a 30 percent nominal depreciation of the Pula, for example, the cumulative fiscal deficit would decline by P 0.5 billion (expressed in the 2008/09 Pula). Conversely, nominal appreciation of the Pula would raise the government's net external payments, thereby increasing the fiscal deficit.

The simulation analysis points to the need for a conservative external borrowing and guarantee policy, as the Pula's movements have implications for the government's compliance with the fiscal rule. This is particularly the case when the level of external debt and guarantees are close to 20 percent of GDP, as nominal depreciation of the Pula against any currencies in which the government's debt is denomnated (e.g., US dollar, Japanese yen, euro, etc.) may push the ratio above the statutory limit. The analysis suggests that although a 15 percent weaker Pula would lower the government's net external interest payment slighly, it would also cause the external debt and guarantee ratio to go up from 20 percent in 2010/11 to 23 percent in 2011/12 in violation of the statutory requirement. With a 30 percent nominal depreciation, the ratio would not only exceed 26 percent in 2011/12, and but also remain above the ceiling thereafter during the entire Plan period.

Table A2. 4. Sensitivity Analysis: Pula/US dollar Nominal Exchange Rate

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Fiscal balance (in percent of GDP)						
30% appreciation	-0.5	-0.1	0.2	0.4	0.4	0.3
15% appreciation	-0.5	-0.2	0.2	0.3	0.3	0.3
Baseline	-0.5	-0.3	0.1	0.3	0.3	0.3
15% depreciation	-0.5	-0.4	0.1	0.3	0.3	0.2
30% depreciation	-0.5	-0.5	0.1	0.3	0.2	0.2
Fiscal balance (in percent of GDP)						
30% appreciation	-10.2	-7.3	-4.4	-2.2	-1.0	0.2
15% appreciation	-10.2	-7.2	-4.3	-2.2	-1.0	0.2
Baseline	-10.2	-7.1	-4.3	-2.1	-0.9	0.3
15% depreciation	-10.2	-7.0	-4.3	-2.1	-0.9	0.3
30% depreciation	-10.2	-6.9	-4.2	-2.0	-0.9	0.3
Cumulative fiscal balance (in billions of 2008/09 Pula)						
30% appreciation	-20.0	-26.8	-31.1	-33.4	-34.5	-34.3
15% appreciation	-20.0	-26.7	-31.0	-33.2	-34.3	-34.1
Baseline	-20.0	-26.6	-30.9	-33.1	-34.1	-33.8
15% depreciation	-20.0	-26.5	-30.7	-32.9	-33.9	-33.5
30% depreciation	-20.0	-26.4	-30.6	-32.7	-33.6	-33.3

Source: Author's calculation.

1/ Negative net external interest payments mean net external interest receipts.

A2.4 Domestic Interest Rate

Changes in domestic interest rates would raise the government's domestic borrowing cost. Although it is not modeled specifically in this framework, higher domestic interest rates are also likely to affect the private sector's incentive for investment negatively, and could compromise future growth. Non-mining tax revenue is likely to suffer as a result.

We examine three situations, where the domestic interest rate is higher than the Baseline assumption by one percentage point, 2 percentage points and 3 percentage points for the entire Plan-period.

Our analysis shows that, as far as the Plan period is concerned, higher domestic interest rates would cause a relatively small impact on the overall fiscal position, reflecting the relatively small domestic debt stock (Table A2. 5). However, in the longer term, when domestic public debt grows towards the prescribed debt ceiling, the impact of the higher domestic interest would be felt more significantly.

Table A2. 5. Sensitivity Analysis: Domestic Interest Rate

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Net domestic interest payment (in percent of GDP) /1						
Baseline	0.4	0.3	0.2	0.3	0.4	0.4
1 percentage point higher	0.5	0.3	0.3	0.4	0.5	0.5
2 percentage points higher	0.5	0.3	0.3	0.4	0.5	0.6
3 percentage points higher	0.6	0.4	0.3	0.5	0.6	0.6
Fiscal balance (in percent of GDP)						
Baseline	-10.2	-7.1	-4.3	-2.1	-0.9	0.3
1 percentage point higher	-10.2	-7.1	-4.3	-2.2	-1.0	0.2
2 percentage points higher	-10.3	-7.2	-4.4	-2.2	-1.1	0.1
3 percentage points higher	-10.3	-7.2	-4.4	-2.3	-1.2	0.0
Cumulative fiscal balance (in billions of 2008/09 Pula)						
Baseline	-20.0	-26.6	-30.9	-33.1	-34.1	-33.8
1 percentage point higher	-20.0	-26.7	-31.0	-33.3	-34.4	-34.2
2 percentage points higher	-20.1	-26.7	-31.1	-33.4	-34.6	-34.5
3 percentage points higher	-20.1	-26.8	-31.2	-33.6	-34.9	-34.9

Author's calculation.

1/ Net of inaterest payments on public domestic debt and interest receipts on PDSF and RSF loans.

A2.5 Cost of New External Borrowing

Next, we turn to the government's external borrowing cost. In view of the growing fiscal deficit, external creditors may impose a higher interest rate on the government's new borrowing. Sensitivity results suggest that, as far as the NDP10 period is concerned, a higher cost of new external borrowing would have virtually no impact on Botswana's fiscal position. This is because of the fact that, faced with the external debt and guarantee ceiling, the government could engage in only a very limited fresh external borrowing during the Plan.

Since its borrowing of US$250 million and provision of guarantees for external debt payable by BPC in 2010/11 would raise the stock of debt and guarantees to 20 percent of GDP in 2010/11, thereafter the government would be able to borrow only a limited amount externally every year, as GDP growth and principal repayments create room for additional external borrowing. However, in the long run, the higher external borrowing cost would pose a significant negative impact on Botswana's fiscal position. As GDP grows and existing external loans are repaid (especially the amortization of the US$1 billion AfDB loan that will start in 2015/16), the government would be able to borrow externally, or put it another way, the government would have to seek roll-over financing for the amortization. Then, the pain of higher external borrowing costs on the budget would be felt more acutely.

A2.6 Size of Government Establishment

Finally, we consider the impact of a possible slippage in government employment policy. Despite its commitment not to expand, in net terms, the size of its establishment, the government may be placed under increasing pressure to hire additional personnel, for example, to ensure that the new schools and hospitals scheduled to be constructed during NDP10 will be adequately staffed. Alternatively, the government may give in to demand from public servants to raise wages above the inflation rate. What would happen to the projected path of the wage bill? We consider situations where the size of the government establishment will grow by one percent, 2 percent and 3 percent, in net terms, every year.

The projection results suggest that the impact of a larger government would be quite detrimental to the overall fiscal position (Table A2. 6).[31] A one percent (net) increase in the size of the government establishment every year—a very modest expansion considering the average annual (net) increase of 4.4 percent during NDP9—would raise the NDP10 cumulative fiscal deficit to P 36 billion (expressed in the 2008/09 Pula). If the government establishment grows at 2 percent annually in net terms, then the cumulative deficit would increase further to P 38 billion. Should the government personnel grow by 3 percent per year, the cumulative deficit could reach P 40 billion (in the 2008/09 Pula). The GIA would be almost depleted by the end of NDP10.

Table A2. 6. Sensitivity Analysis: Size of Government Establishment

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Wage bill (in percent of GDP)						
Baseline	9.1	8.7	8.1	7.7	7.4	7.2
1% higher growth	9.2	8.9	8.4	8.0	7.8	7.7
2% higher growth	9.3	9.0	8.6	8.3	8.2	8.1
3% higher growth	9.4	9.2	8.9	8.7	8.6	8.6
Fiscal deficit (in percent of GDP)						
Baseline	-10.2	-7.1	-4.3	-2.1	-0.9	0.3
1% higher growth	-10.2	-7.3	-4.6	-2.5	-1.4	-0.3
2% higher growth	-10.3	-7.5	-4.8	-2.8	-1.8	-0.8
3% higher growth	-10.4	-7.7	-5.1	-3.2	-2.3	-1.4
Cumulative deficit (in billions of 2008/09 Pula)						
Baseline	-20.0	-26.6	-30.9	-33.1	-34.1	-33.8
1% higher growth	-20.1	-26.8	-31.4	-33.9	-35.4	-35.7
2% higher growth	-20.1	-27.1	-31.9	-34.8	-36.8	-37.7
3% higher growth	-20.2	-27.3	-32.4	-35.7	-38.2	-39.8
GIA (in percent of GDP)						
Baseline	12.5	5.9	4.2	4.6	5.5	6.0
1% higher growth	12.4	5.7	3.6	3.8	4.3	4.3
2% higher growth	12.3	5.4	3.1	3.0	3.0	2.5
3% higher growth	12.2	5.1	2.6	2.1	1.7	0.7

Source: Author's calculation.

Botswana's wage bill is already at a very high level, with government employees accounting for over 40 percent of the formal sector labor forces. The high wage bill is worrisome not only from the fiscal perspective but also from the growth perspective, as an upward movement in public sector wages tends to impede the private sector's ability to compete effectively internationally.[32]

[31] While a higher government wage bill should translate to a higher personal income tax collection, this effect is not incoporated in this sensitivity analysis in the absence of information on the wage structure and personal income tax.

[32] Atkinson and Hamilton (2003) show evidence that growth rates have suffered in resource abundant countries, whose government has directed resource revenues towards public sector wages. Their cross-country regression

A2.7 Combination

The sensitivity analysis so far suggests that Botswana's fiscal position can be very vulnerable to a combined shock of lower diamond exports, a larger government establishment and, to a small extent, nominal appreciation of the Pula. The final part of the sensitivity analysis thus considers a simultaneous change in all these three elements, and examines how the Baseline fiscal paths would respond. We assume that: (i) diamond exports would not recover fully until 2014/15; (ii) the number of the government established posts would grow at 4.4 percent a year in net terms, the average (net) growth rate during NDP9; and (iii) the Pula would appreciate against the US dollar by 15 percent in nominal terms in 2011/12. As before, after the initial depreciation, the Pula/US nominal dollar exchange rate is assumed to follow the trend assumed in the Baseline Scenario.

The results suggest that Botswana's fiscal position would deteriorate significantly by the simultaneous changes in the three key assumptions (see Table A2. 7). With the rapid growth of the establishment, the government wage bill would rise above 10 percent of GDP in the first few years of the Plan, absorbing more than a third of total government revenue (about 80 percent of non-mining, non-SACU revenue). The high wage bill, coupled with lower mineral revenue, would push up the fiscal deficit significantly. During the entire Plan period, the fiscal position would remain in a significant deficit. The cumulative deficit would shoot up from P 34 billion to P 57 billion (both expressed in the 2008/09 Pula), equivalent to 65 percent of 2008/09 GDP. Meanwhile, government external debt and guarantees would exceed the statutory ceiling of 20 percent in 2010/11. The government would have no choice but rely heavily on fiscal savings and domestic borrowing to close the financing gap. As a result, the GIA would be depleted by 2011/12, and thereafter government domestic debt and guarantees would rise sharply. By 2015/16, the final year of the Plan, domestic debt and guarantees would reach 20 percent of GDP, and the government would have exhausted all the means for financing. There would remain a fiscal gap of 1.9 percent of GDP, which could not be filled under the existing legal framework.

Table A2. 7. Sensitivity Analysis: Combination

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Wage bill (in percent of GDP)						
Baseline	9.1	8.7	8.1	7.7	7.4	7.2
Combo	10.1	10.0	9.8	9.7	9.7	9.9
Fiscal balance (in percent of GDP)						
Baseline	-10.2	-7.1	-4.3	-2.1	-0.9	0.3
Combo	-13.1	-10.7	-8.3	-6.5	-5.8	-5.1
Cumulative fiscal balance (in billinos of 2008/09 Pula)						
Baseline	-20.0	-26.6	-30.9	-33.1	-34.1	-33.8
Combo	-22.0	-31.3	-39.2	-45.6	-51.7	-57.1
GIA balance (in percent of GDP) /1						
Baseline	12.5	5.9	4.2	4.6	5.5	6.0
Combo	10.8	0.0	0.0	0.0	0.0	-1.9
Domestic debt & guarantees (in percent of GDP)						
Baseline	4.4	4.3	5.4	6.6	7.0	5.9
Combo	4.7	5.2	11.6	15.8	19.3	20.0
External debt & guarantees (in percent of GDP)						
Baseline	20.0	20.0	20.0	20.0	20.0	20.0
Combo	21.1	20.0	20.0	20.0	20.0	20.0

analysis shows that a one percent increase in the share of government wages and salaries in total government expenditure has, on average, led to lower growth by 0.6 percent in resource rich countries.

Net external financial position (in percent of GDP)						
Baseline	-3.0	-9.8	-13.4	-14.6	-14.7	-13.7
Combo	-5.5	-17.5	-24.5	-29.2	-33.1	-36.3

Source: Author's calculation.

1/ A negative GIA balance suggests part of fiscal deficit that cannot be financed under the existing legal framework.

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